Cassette Deck

Service Manual

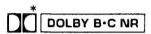
Dolby NR-Equipped Stereo Double Cassette Deck **RS-X302**

Color

(K)...Black Type

Area

| | 1 | |
|-----------------|---|-------|
| Country Code | Area | Color |
| (E) | Continental Europe. | |
| (EB) | Great Britain. | |
| (EG) | F.R. Germany and Italy. | |
| (GC) | Asia, Latin America, Middle Near East and Africa. | (K) |
| (GN) | Oceania. | |





MECHANISM SERIES (AR300)

SPECIFICATIONS

CASSETTE DECK SECTION

Deck system Stereo cassette deck Track system 4-track, 2-channel Heade (tape deck 2) rec/play Permalloy head erasing Double-gap ferrite head (tape deck 1) play Permalloy head Motors (tape deck 2) Capstan/reel table drive DC servo motor (tape deck 1) Capstan/reel table drive DC servo motor Recording system AC bias Bias frequency 80 kHz Erasing system AC erase Tape speeds 4.8 cm/sec. (1-7/8 ips) Frequency response (w/o Dolby NR) NORMAL 30 Hz~16 kHz

40 Hz~15 kHz (DIN)

CrO₂ 30 Hz~16 kHz
40 Hz~15 kHz (DIN)

METAL 30 Hz~18 kHz
40 Hz~17 kHz (DIN)

S/N (signal level = max recording level, CrO₂ type tape)

Dolby C NR ON 74 dB (CCIR)

Dolby B NR ON 66 dB (CCIR)

Dolby NR OFF 56 dB (A weighted)

Wow and flutter 0.1 % (WRMS)

Fast forward and rewind times

Approx. 110 seconds with C-60 cassette tape

60 mV/47 kO

Input sensitivity and impedance

LINE

Output voltage and impedance LINE 400 mV/800 Ω

■ GENERAL

Power consumption 15 W Dimensions (W \times H \times D) 360 \times 129 \times 285 mm (14-3/16" \times 5-3/32" \times 11-7/32") Weight 3.7 kg (8.1 lb.)

Note:

Specifications are subject to change without notice. Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

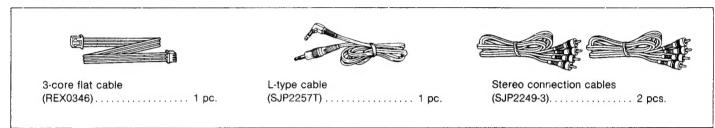
Technics

CONTENTS

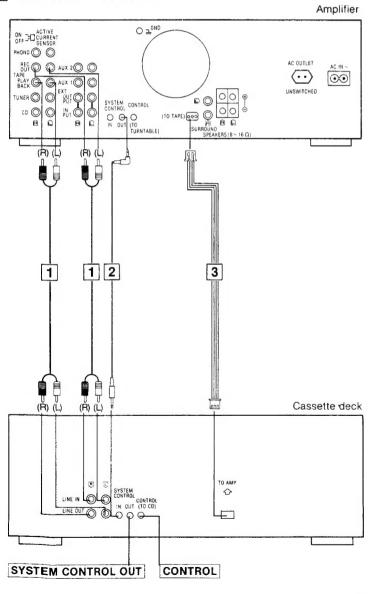
| | Page |
|---|--------|
| ACCESSORIES | 2 |
| CONNECTIONS | 2 |
| LOCATION OF CONTROLS | 3, 4 |
| DISASSEMBLY INSTRUCTIONS | 5~8 |
| INFORMATION ON POWER SUPPLY FIXTURE | 9 |
| MEASUREMENTS AND ADJUSTMENTS | 10~12 |
| BLOCK DIAGRAM | 13, 14 |
| PRINTED CIRCUIT BOARDS | 15~18 |
| SCHEMATIC DIAGRAM | 19~23 |
| TERMINAL GUIDE OF IC'S, TRANSISTORS AND | |
| DIODES | 23 |

| | Page |
|-----------------------------------|--------|
| INTERNAL CONNECTION OF FL | 24 |
| WIRING CONNECTION DIAGRAM | 25 |
| TERMINAL FUNCTION OF IC'S | 26, 27 |
| PACKING | • |
| REPLACEMENT PARTS LIST | |
| RESISTORS & CAPACITORS | |
| EXPLODED VIEWS (Cabinet parts) | 32. 33 |
| REPLACEMENT PARTS LIST | |
| EXPLODED VIEWS (Mechanical parts) | |
| REPLACEMENT PARTS LIST | |
| | |

ACCESSORIES



CONNECTIONS



Make connections in the numbered sequence by using the included cables.

Stereo connection cable White (L) = Red (R)

- 1 Connect the stereo connection cables.
- 2 Connect the L-type cable.
- 3 Connect the flat cable.

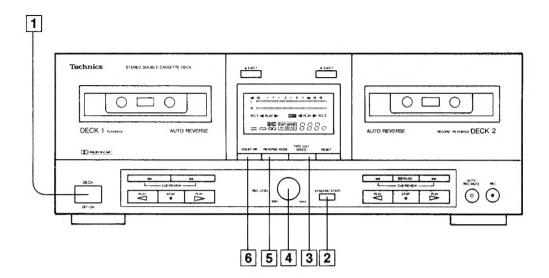
SYSTEM CONTROL OUT

This terminal is used to connect a Technics compact disc player or a Technics stereo graphic equalizer with the "SYSTEM CONTROL IN" terminal.

CONTROL

This terminal is used to connect a Technics multi compact disc player with the "CONTROL" terminal.

LOCATION OF CONTROLS



Controls common to both tape decks

1 DECK ON/OFF switch (DECK)

2 Synchro-start button (SYNCHRO START)

This button can be used to start a tape-to-tape recording, simultaneously starting tape deck 1 (the playback deck) and tape deck 2 (the recording deck).

3 Tape-to-tape recording tape-speed selector (TAPE EDIT SPEED)

This selector can be used to select the recording speed when a tape-to-tape recording is made.

4 Recording-level control (REC LEVEL)

This control can be used to regulate the recording level of tape deck 2.

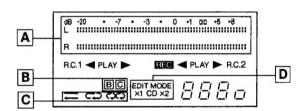
5 Reverse-mode selector (REVERSE MODE)

This selector can be used for selection of the reverse mode (for either playback or recording).

6 Dolby noise-reduction selector (DOLBY NR)

This selector can be used to reduce the hiss noise that is characteristic of tapes. This unit is provided with both the B-type and C-type noise-reduction systems.

Indicators common to both tape decks



A Input level meter

During playback, this meter indicates the level of the recorded sound source.

During recording, it indicates the level being recorded, adjusted by the recording-level control.

B Dolby noise-reduction indicators (B, C)

One of these indicators illuminates to show the type of Dolby noise-reduction system selected by pressing the Dolby noise-reduction selector.

C Reverse-mode indicators (⇌ , ⇔ , ⇔)

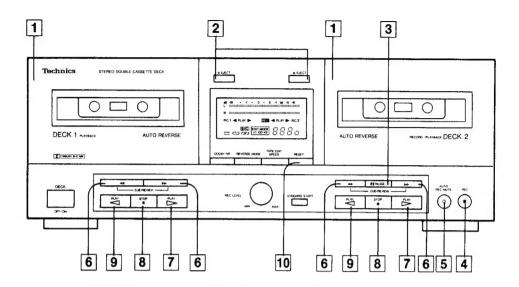
One of these indicators illuminates to show which of the reverse modes was selected by the reverse-mode selector.

D Edit-recording indicators (EDIT MODE, CD, ×1, ×2)

The words "EDIT MODE" and "×1 (or "×2") indicator will illuminate when a tape-to-tape recording is made. The words "EDIT MODE" and "CD" indicator will illuminate when a CD edit-recording is made.

Tape deck 1

Tape deck 2



Controls applicable to tape deck 1 and/or 2

1 Cassette holder

2 Eject button (▲ EJECT)

This button can be used to open the cassette holder.

3 Pause button (## PAUSE)

This button can be used to temporarily stop the tape playback or recording, on tape deck 2 only.

4 Record button (REC)

This button can be used to change tape deck 2 to the recording stand-by mode.

5 Automatic-record-muting button (AUTO REC MUTE)

This button can be used to make a silent interval on the tape during recording, on tape deck 2 only.

6 Fast-forward/cue, rewind/review buttons (◀◀, ▶▶)

These buttons are used to advance or rewind the tape. During playback, these buttons are used to cue or review while listening to the contents at high speed.

7 Forward-side playback button (> PLAY)

This button can be used to start the playback or recording of side "A" of the cassette in tape deck 2 only. (The tape will then begin moving in the left-to-right direction.)

8 Stop button (STOP)

This button can be used to stop tape movement.

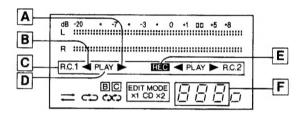
9 Reverse-side playback button (< PLAY)

This button can be used to start the playback or recording of side "B" of the cassette in tape deck 2 only. (The tape will then begin moving in the right-to-left direction.)

10 Tape counter reset button (RESET)

This button can be used to reset the tape counter indication (for tape deck 2 only) to "000".

Indicators applicable only to deck 1 or 2



A Forward-side indicator (▶)

This indicator illuminates during playback or recording on tape deck 2 to indicate that side "A" of the tape is being used.

B Reverse-side indicator (◄)

This indicator illuminates during playback or recording on tape deck 2 to indicate that side "B" of the tape is being used.

C Remote-control indicator (R.C.1/R.C.2)

This indicator illuminates to indicate that this tape deck can now be controlled by the remote-control transmitter (included with tuner).

D Playback indicator (PLAY)

When this indicator illuminates steadily, it indicates that this tape deck is in the playback mode or the recording mode (for tape deck 2 only).

When it flashes continually, this is an indication that tape deck 2 is in the pause mode or the recording stand-by mode.

E Recording indicator (REC)

This indicator illuminates to indicate that tape deck 2 is in the recording stand-by mode or is recording.

F Tape deck 2 counter

Indicates the amount of tape movement.

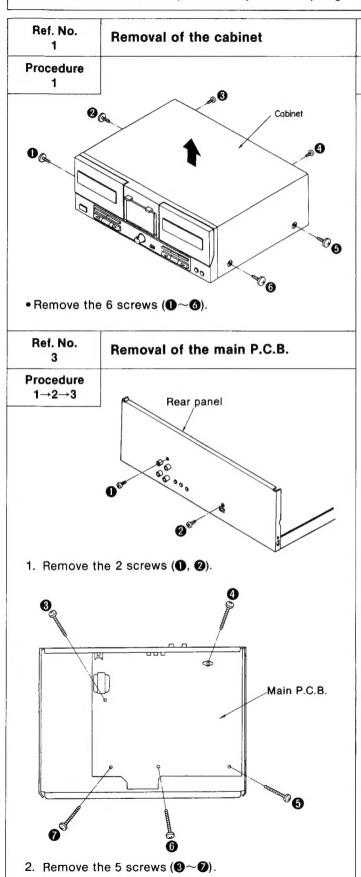
■ DISASSEMBLY INSTRUCTIONS

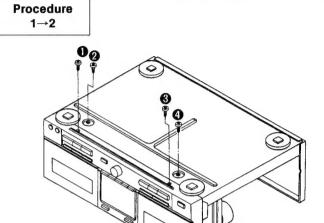
"ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No.

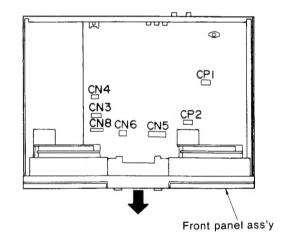
2





Removal of the front panel ass'y

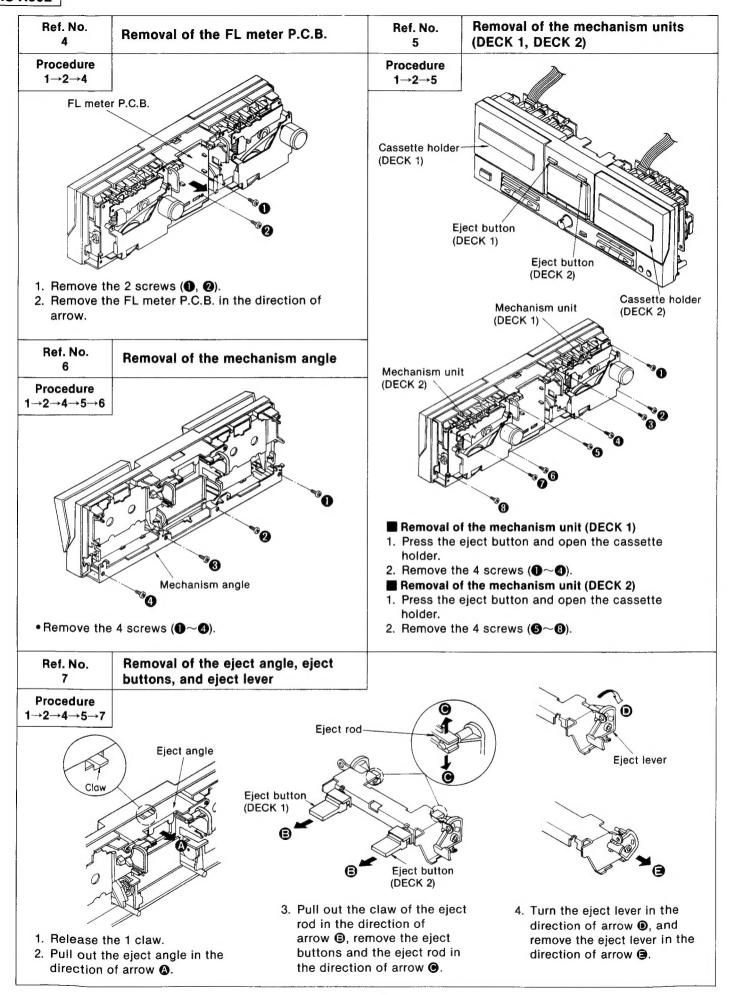
1. Remove the 4 screws (1~4).

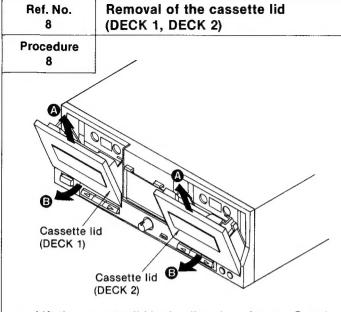


- 2. Remove the 2 connectors (CP1, CP2).
- 3. Remove the 5 flat cables (CN3, CN4, CN5, CN6, CN8).
- Remove the front panel ass'y in the direction of arrow.

How to remove the flat cable

Pull out the flat cable while pressing the connector.
 (CN3, CN5, CN8)
 Pull out the flat cable.
 (CN4, CN6)
 Flat cable
 Connector

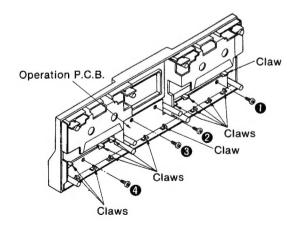




• Lift the cassette lid in the direction of arrow (3) and remove it in the direction of arrow (3).

| Ref. No. 10 | Removal of the operation P.C.B. |
|----------------|---------------------------------|
| Procedure | |
| 1→2→4→5→6 | |
| →7:→8→9→10 | >\ |
| Re | c level knob |

1. Remove the rec level knob.

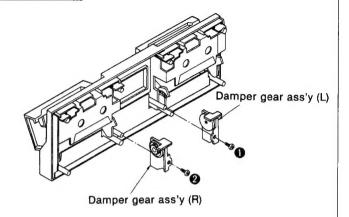


- 2. Remove the 4 screws (1~4).
- 3. Release the 14 claws.

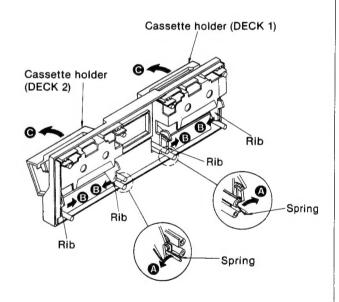
Ref. No. 9

Removal of the cassette holder (DECK 1, DECK 2)

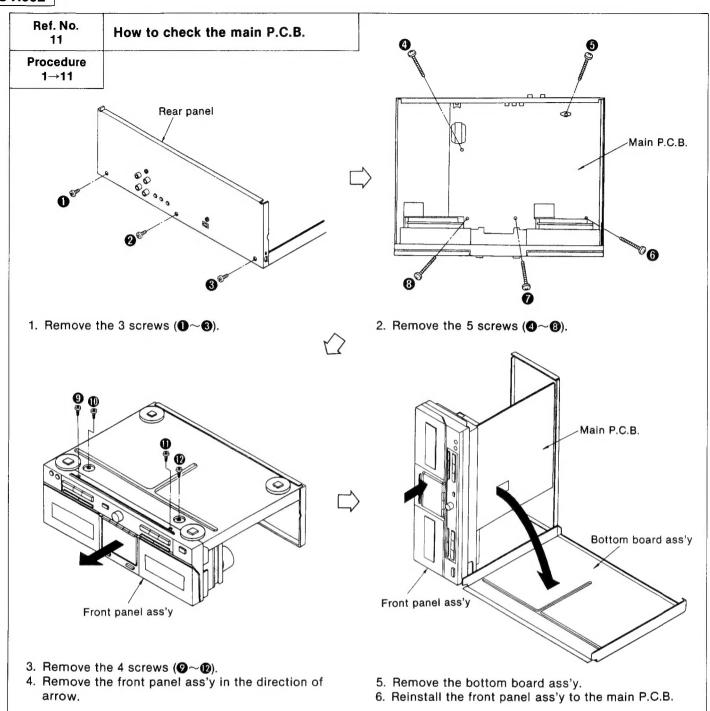
Procedure 1→2→4→5 →6→7→8→9



- 1. Remove the 2 screws (1, 2).
- 2. Remove the damper gear ass'y (L) and damper gear ass'y (R).

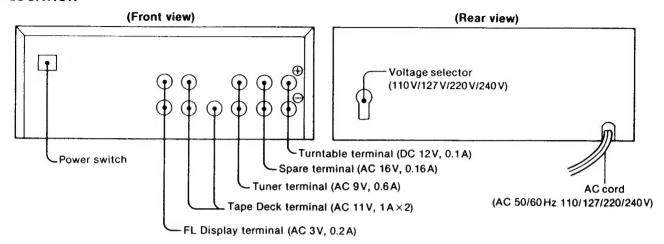


- 3. Remove the springs in the direction of arrow .
- 4. Remove the ribs in the direction of arrow 3.
- 5. Remove the cassette holder in the direction of arrow .

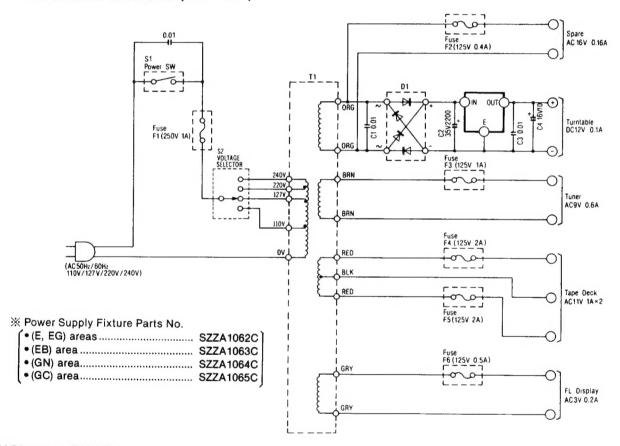


■ INFORMATION ON POWER SUPPLY FIXTURE

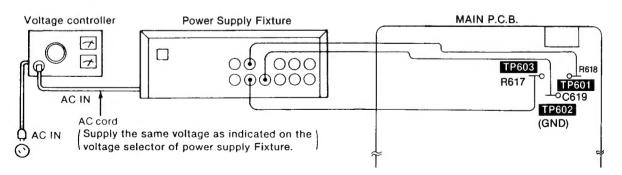
LOCATION



• SCHEMATIC DIAGRAM (Reference)



HOW TO CONNECT



MEASUREMENTS AND ADJUSTMENTS

Measurement Condition

- Rec. level control; Maximum
- Reverse-mode selector switch;
- Tape-to-tape-recording tape-speed selector; X1
- · Dolby NR selector switch; Off
- · Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20 ±5°C (68 ± 9°F)

Measuring instrument

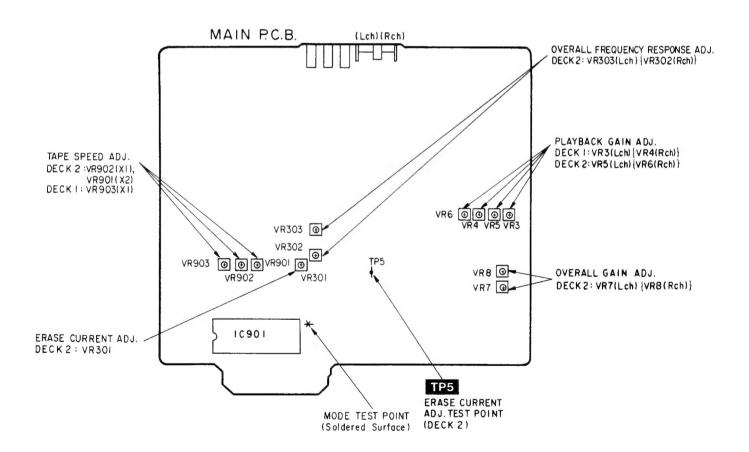
- EVM (Electronic Voltmeter)
- Oscilloscope
- · Digital frequency counter
- AF oscillator

- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment Normal reference blank tape; QZZCRA CrO₂ reference blank tape; QZZCRX Metal reference blank tape; QZZCRZ

Adjustment Points



HEAD AZIMUTH ADJUSTMENT (DECK 1/2)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

- 2. Perform the same adjustment in the play mode.
- 3. After the adjustment, apply screwlock to the azimuth adjusting screw.

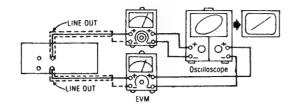


Fig. 1

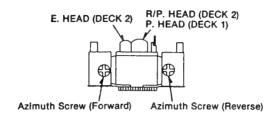


Fig. 2

TAPE SPEED ADJUSTMENT (DECK 1/2)

Normal speed

- 1. Shift the Tape-to-tape recording tape-speed selector to "X1" and press the synchro-start button.
- 2. Playback the middle portion of the test tape (QZZCWAT).
- 3. Adjust Deck 1 = VR903 and Deck 2 = VR902 so that the output is within the standard value.

- 4. Shift the Tape-to-tape recording tape speed switch to "X2" and press the synchro-start button.
- 5. Playback the middle portion of the test tape (QZZCWAT).
- 6. Adjust Deck 2=VR901 so that the output is within the standard value.

Note: The Normal speed adjustment must be done before



Fig. 3

the High speed adjustment.

(DECK 1) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 600 Hz [High (X2), only confirmation] (DECK 2) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 30 Hz [High (X2)]

PLAYBACK GAIN ADJUSTMENT (DECK 1/2)

- 1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
- 2. Adjust Deck 1 = VR3 (L-CH) [[VR4 (R-CH)]] and Deck 2=VR5 (L-CH) [[VR6 (R-CH)]] so that the output is within the standard value.

Standard value: 0.4V±0.5dB

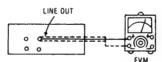
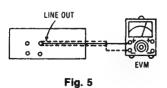


Fig. 4

PLAYBACK FREQUENCY RESPONSE (DECK 1/2)

- 1. Playback the frequency response portion (315Hz, 12.5 kHz~63 Hz, −20 dB) of the test tape (QZZCFM).
- 2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.



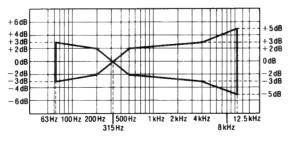
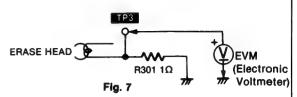


Fig. 6

ERASE CURRENT ADJUSTMENT (DECK 2)

- 1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
- 2. Adjust VR301 so that the output between TP3 and GND is within the standard value.

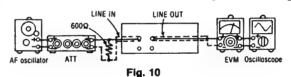
Standard value: 190±5mA (Metal)...EVM Reading: 190±5mV



RS-X302

OVERALL FREQUENCY RESPONSE (DECK 2)

- 1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
- 2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
- 3. Attenuate the signal by 20dB and adjust the frequency from 50 Hz~10 kHz.
- 4. Record the frequency sweep.
- 5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1 kHz).
- 6. If it is not within the standard range, adjust VR303 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
- Level up in high frequency rangeIncrease the bias current.
- · Level down in high frequency range ... Decrease the bias current. 7. Repeat steps 2~6 above using the CrO₂ tape (QZZCRX)
- and the Metal tape (QZZCRZ) increasing the frequency range to 12.5 kHz (50 Hz~12.5 kHz).
- 8. Assure that the level is within the range shown in Fig. 9.



Normal Overall frequency response chart (NR OUT)

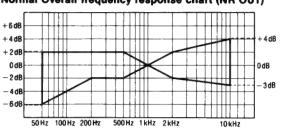


Fig. 8

CrO₂ Metal Overall frequency response chart (NR OUT)

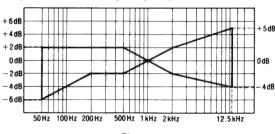
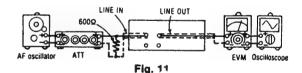


Fig. 9

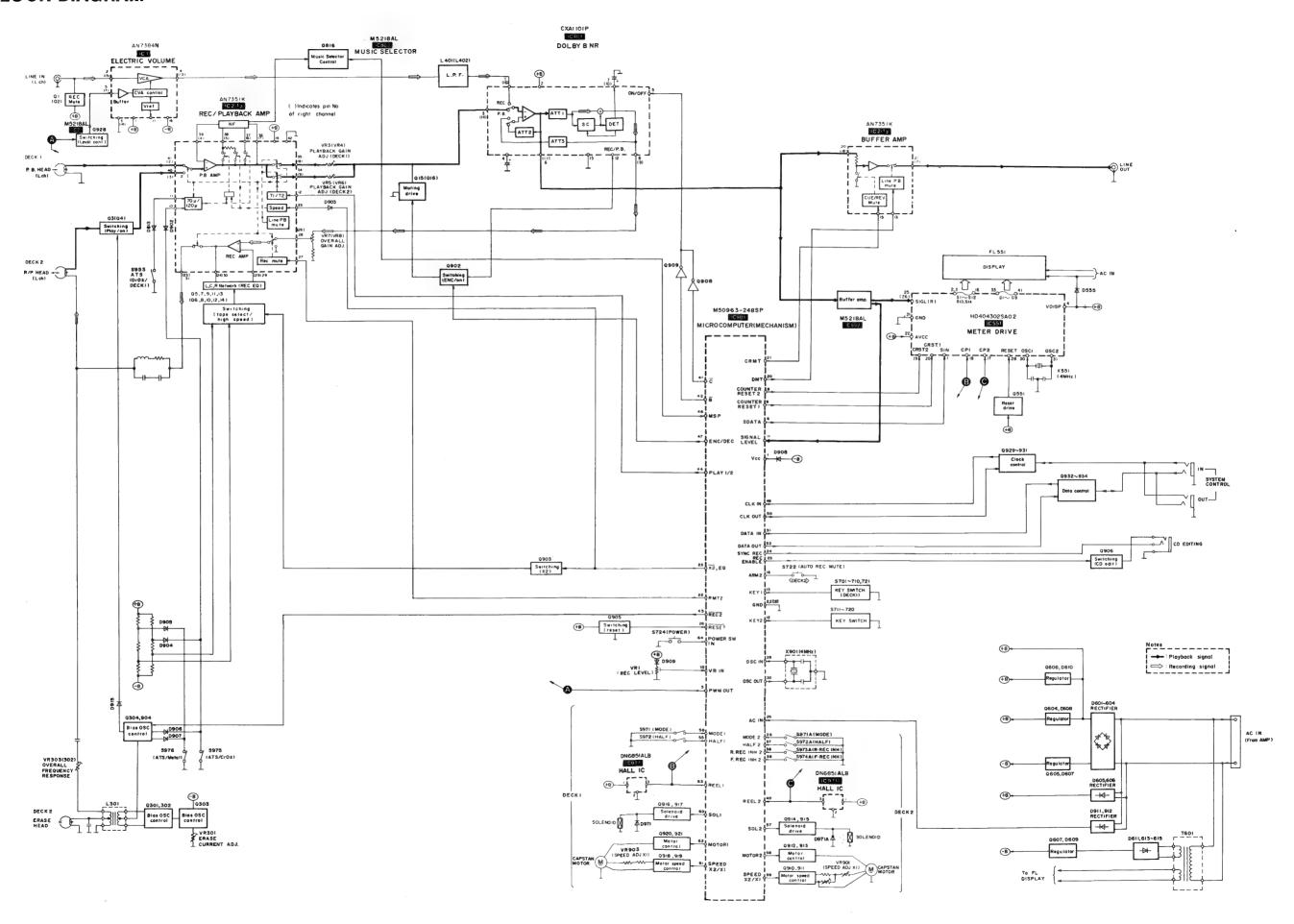
OVERALL GAIN ADJUSTMENT (DECK 2)

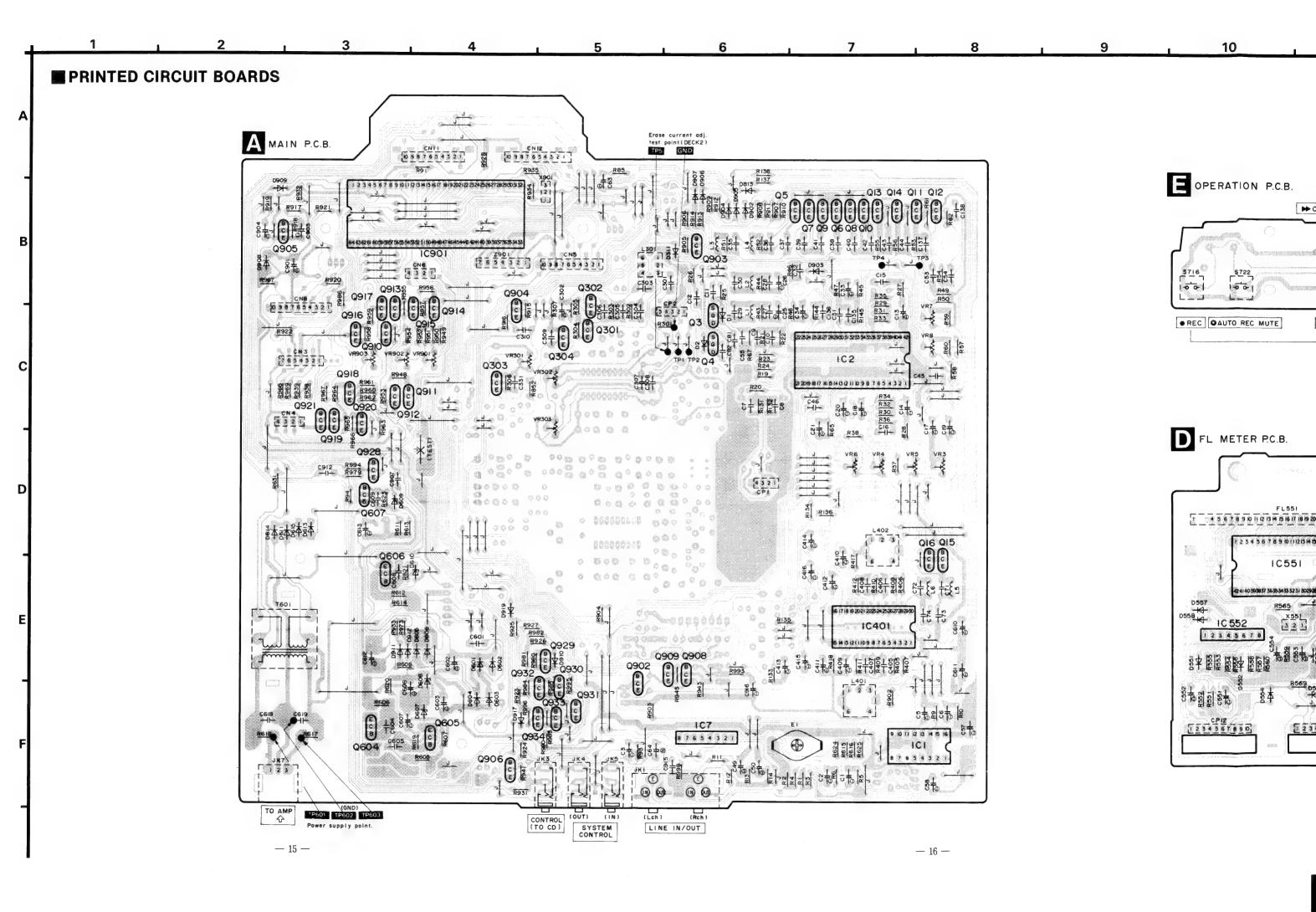
- 1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
- 2. Apply a reference input signal (1kHz, -24dB). Attenuate the output so that its level becomes 0.4 V.
- 3. Record this input signal.
- 4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
- 5. If it is not within the standard value, adjust VR7 (L-CH) and VR8 (R-CH).
- 6. Repeat the step $2\sim$ 5 above until the output is within the standard value.



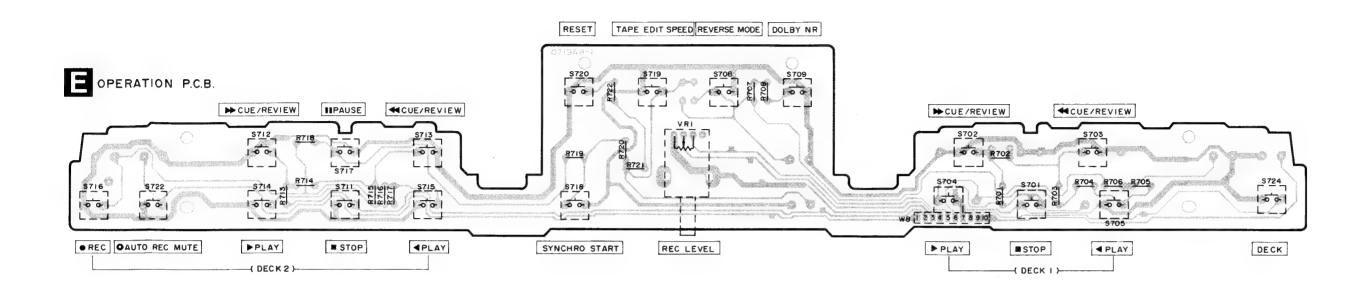
Standard value: 0.4 V ± 0.5 dB

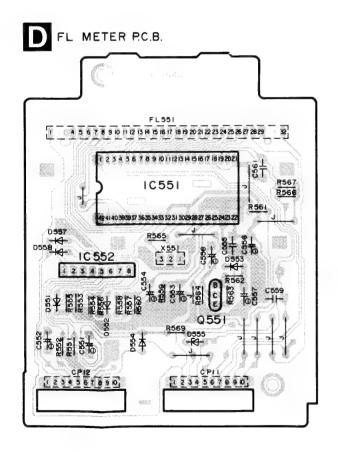
■ BLOCK DIAGRAM

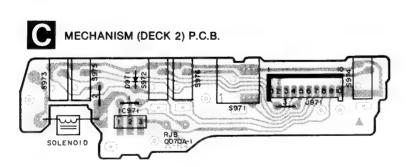


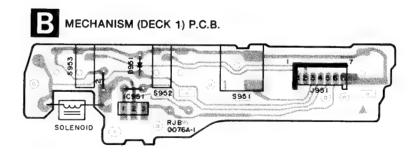


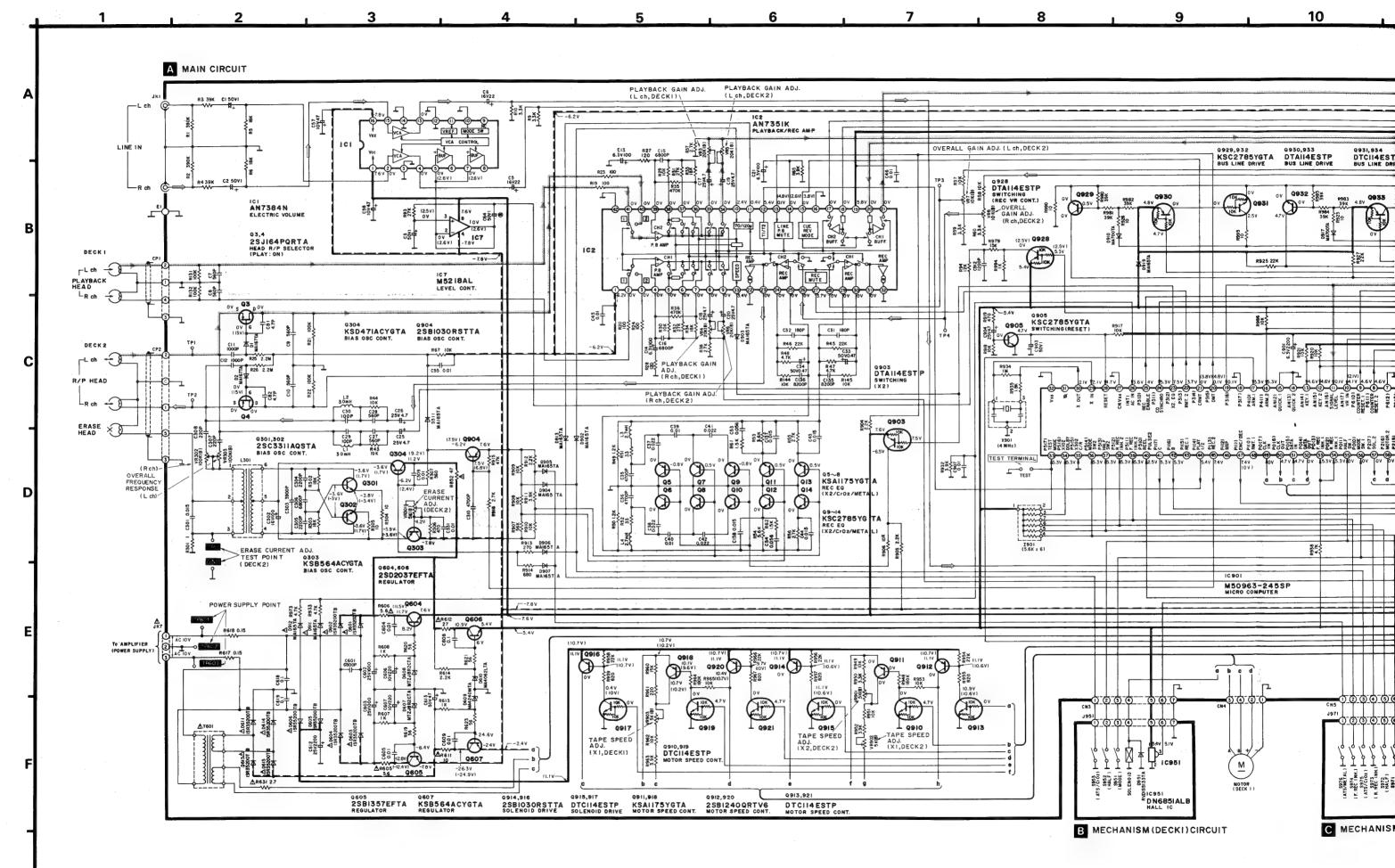
10 11 12 13 14 15 16 17 18 19

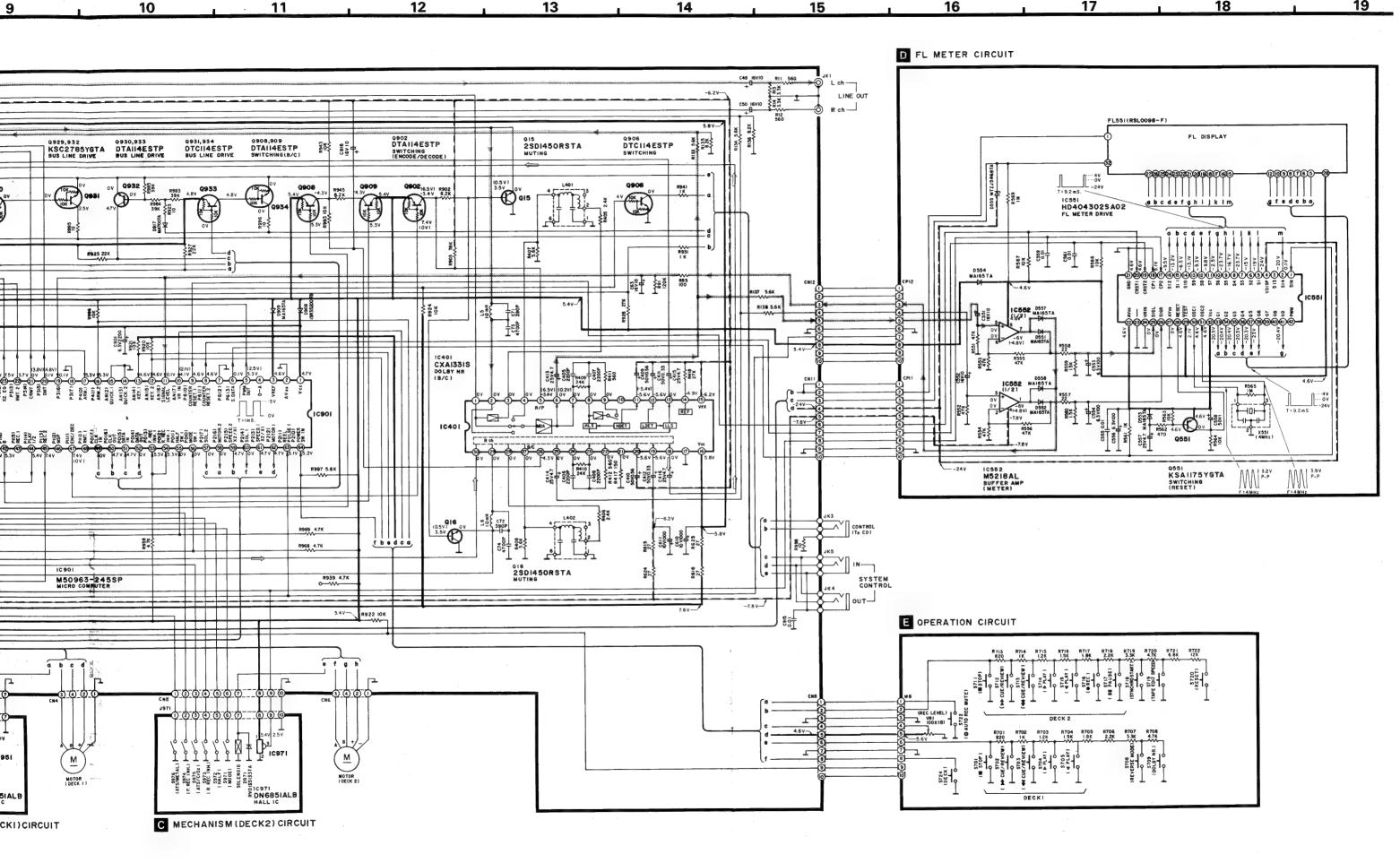












17

16

18

19

SCHEMATIC DIAGRAM (Parts list on pages 28~31.)

(This schematic diagram may be modified at any time with development of new technology.)

Notes:

- S701: DECK 1 Stop switch (STOP).
- S702: DECK 1 Fast-forward switch (▶▶).
- S703: DECK 1 Rewind switch (◄◄).
- S704: DECK 1 Forward-side playback switch (> PLAY).
- S705: DECK 1 Reverse-side playback switch (< PLAY).
- S708: Reverse mode switch
 - (REVERSE MODE; ⇒, ⇔, ⇔, ⇔).
- S709: Dolby noise-reduction selector switch (Dolby NR; B, C).
- S711: DECK 2 Stop switch (STOP).
- S712: DECK 2 Fast-forward switch (▶▶).
- S713: DECK 2 Rewind switch (◄◄).
- S714: DECK 2 Forward-side playback switch (> PLAY).
- S715: DECK 2 Reverse-side playback switch (< PLAY).
- S716: DECK 2 Record switch (REC).
- S717: DECK 2 Pause switch (EE PAUSE).
- S718: Synchro-start switch (SYNCHRO START).
- S719: Tape-to-tape recording tape-speed selector switch (TAPE EDIT SPEED).
- S720: DECK 2 Tape counter reset switch (RESET).
- S722: DECK 2 Automatic-record-muting switch (AUTO REC MUTE).
- S724: DECK ON/OFF switch in "on" position (DECK).
- S951: DECK 1 Mode switch in "off" position.
- S952: DECK 1 Cassette half detection switch in "off" position.
- S953: DECK 1 ATS (CrO₂) switch in "off" position.
- S971: DECK 2 Mode switch in "off" position.
- S972: DECK 2 Cassette half detection switch in "off" position.
- \$973: DECK 2 Rev. Rec Inhibit switch in "off" position.
- S974: DECK 2 For. Rec Inhibit switch in "off" position.
- S975: DECK 2 ATS (CrO₂) switch in "off" position.
- S976: DECK 2 ATS (Metal) switch in "off" position.

- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
- $1 K = 1,000 (\Omega), 1 M = 1,000 k (\Omega)$
- Capacity are in micro-farads (µF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode of deck 2 with volume control at minimum position otherwise specified.
 - >Voltage values at playback mode of deck 1.
 - ()......Voltage values at record mode.

For measurement us EVM.

Important safety notice

Components identified by \triangle mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

- (----< +B>) indicates +B (bias).
- ($\Rightarrow = < -B > \Rightarrow =$) indicates -B (bias).
- () indicates the flow of the playback signal.
- () indicates the flow of the record signal.
- The supply part number is described alone in the replacement parts list.

| Ref. No. | Production Part No. | Supply Part No. |
|----------|---------------------|-----------------|
| IC7, 552 | M5218AL | M5218L |

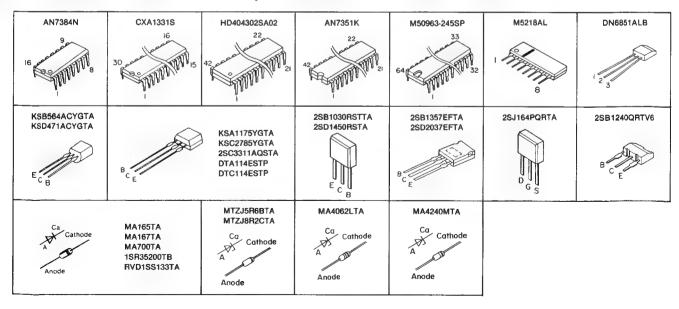
* Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

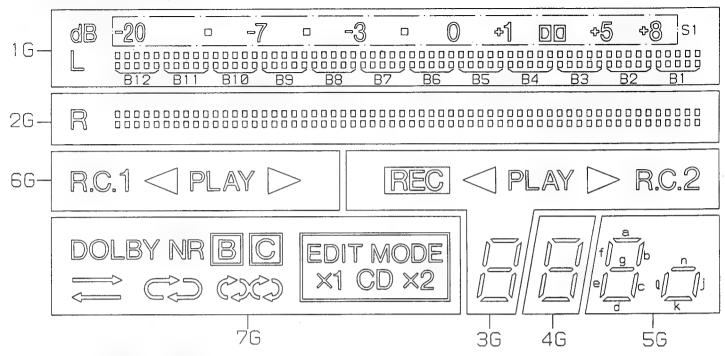
- * Cover the parts boxes made of plastics with aluminum foil.
- * Ground the soldering iron.
- * Put a conductive mat on the work table.
- * Do not touch the legs of IC or LSI with the fingers directly.

TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



■INTERNAL CONNECTION OF FL

• Grid connection diagram



Anode connection table

| | 7G | 6G | 5G | 4G | 3G | 2G | 1 G |
|-----|-----------|------------------|----|----|------------------|-----|------|
| P1 | (C)(C) | \triangleright | n | | \triangleright | B1 | B1 |
| P2 | | PLAY | j | _ | PLAY | B2 | B2 |
| P3 | | | Q | - | | B3 | В3 |
| P4 | EDIT MODE | R.C.1 | k | _ | R.C.2 | B4 | В4 |
| P5 | CD | | _ | _ | REC | B5 | B5 |
| P6 | ×2 | _ | a | a | а | B6 | В6 |
| P7 | ×1 | _ | b | b | р | B7 | В7 |
| P8 | _ | _ | f | f | f | B8 | B8 |
| P9 | B | _ | g | g | g. | B9 | B9 |
| P10 | C | _ | C | С | С | B10 | B10 |
| P11 | DOLBYNR | | е | е | е | B11 | B11 |
| P12 | _ | _ | ď | d | ď | B12 | B12 |
| P13 | _ | _ | _ | _ | - | | S1 |
| P14 | _ | _ | _ | | _ | | dB L |

Pin connection

| PIN NO. | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|------------|--------|--------|--------|----|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----|----|--------|----|-----|--------|--------|--------|--------|--------|----|--------|--------|--------|
| CONNECTION | F 2 | F 2 | N P | NC | P 14 | P 12 | P 11 | P 10 | Р 9 | P 8 | P 7 | P 6 | P 5 | P 4 | P 3 | P 2 | P 1 | P 13 | 02 | NC | 7 G | NC | 6 G | 5 G | 4 G | 3 G | 2 G | 1 G | NC | N P | F 1 | F 1 |

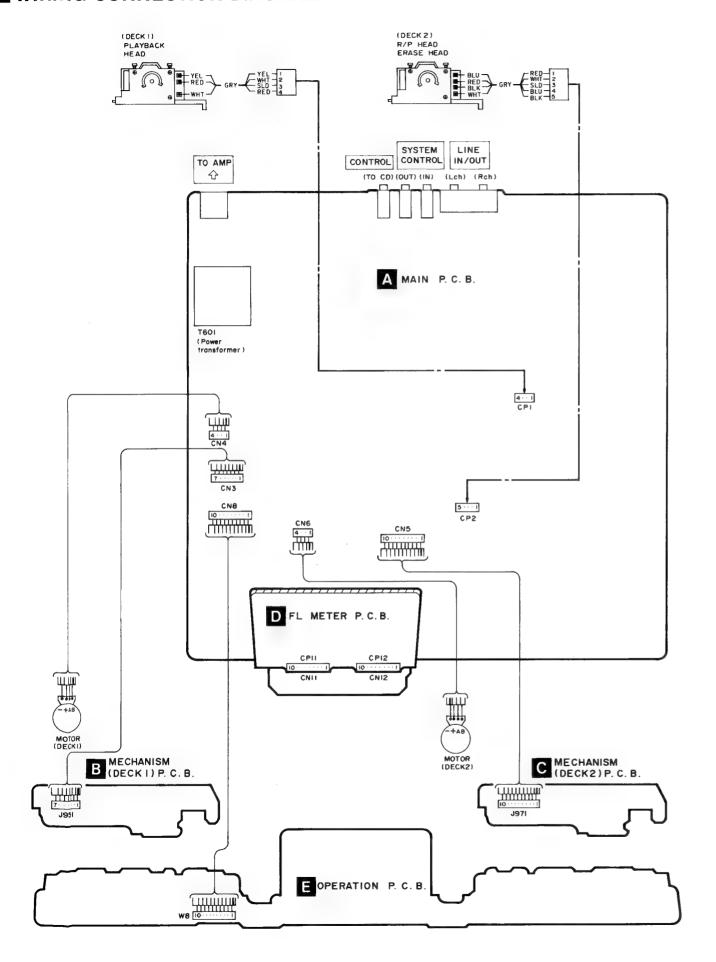
Note

| 1) | F1, F2 | Filament |
|----|--------|----------|
| | NP | |

| 3) | NC | No | connection |
|----|----|----|------------|

4) 1G~7G.....Grid

■ WIRING CONNECTION DIAGRAM



TERMINAL FUNCTION OF IC'S

• IC901 (M50963-245SP): MICROCOMPUTER (This microcomputer is used for mechanical operation.)

| Pin No. | Mark | I/O Division | Function |
|------------|------------------------|-----------------|--|
| 1 | V _{cc} | 1 | Power supply terminal |
| 2 | AV _{SS} (GND) | _ | GND terminal |
| 3 | V _{REF} | I | Reference voltage terminal |
| 4 | D-A | _ | Not used, open |
| 5 | PWM | 0 | Pulse width modulated signal |
| 6 | P6 (3) | 0 | Serial signal for FL display |
| 7 | P6 (2) | _ | Not used, open |
| 8 | P6 (1) | 0 | Counter reset signal of deck 2 ("RESET": "L", others: "H") |
| 9 | P6 (0) | 0 | Counter reset signal of deck 1 ("RESET": "L", others: "H") |
| 10 | AN (7) | l | Variable voltage level signal of rec. level volume |
| 11 | AN (6) | I | Peak voltage terminal of rec. signal |
| 12 | AN (5) | l | Operation key switches Deck 2: STOP, F.F./REW, PLAY, REC, PAUSE, SYNCHRO START, X1/X2, counter reset |
| 13 | AN (4) | _ | Operation key switches Deck 1: STOP, F.F./REW, F. PLAY, R. PLAY, Reverse-mode, Dolby B/C, Meter-range counter reset |
| 14 | AN (3) | _ | Not used |
| 15 | AN (2) | _ | Not used |
| 16 | P4 (1) | 1 | "AUTO REC MUTE" key switch signal of deck 2 ("ON": "L", "OFF": "H") |
| 17 | P4 (0) | 1 | Not used, open |
| 18 | P3 (7) | _ | Not used |
| 19 | P3 (6) | - | Not used |
| 20 | P3 (5) | 0 | Mute signal of line out (Mute "ON": "H", Mute "OFF": "L") |
| 21 | P3 (4) | 0 | Mute signal with Cue/Review action (Mute "ON": "H", Mute "OFF": "L") |
| 22 | P3 (3) | 0 | Rec. mute signal of deck 2 (Mute "ON": "H", Mute "OFF": "L") |

| Pin No. | Mark | I/O Division | Function |
|------------|------------------|-----------------|---|
| 23 | P3 (2) | 0 | Playback equalizer select signal with tape edit of deck 1 (Normal: "H", X2 edit: "L") |
| 24 | P3 (1) | ı | CD Synchro rec. signal (CD STOP: "H", CD PLAY: "L") |
| 25 | P3 (0) | 0 | CD Synchro rec. possible/impossible signal (possible: "L", impossible: "H") |
| 26 | INTI | ı | "AC POWER OFF" det. terminal |
| 27 | CNVss | _ | GND terminal |
| 28 | RESET | ı | Reset signal ("L"=RESET, Normal: "H") |
| 29 | X _{IN} | 1 | Cleak OSC terminal |
| 30 | X _{out} | 0 | Clock OSC terminal |
| 31 | φ | _ | Not used, open |
| 32 | V _{ss} | _ | GND terminal |
| 33 | P5 (7) | 1 | Test terminal (Normal="H") |
| 34 | P5 (6) | 1 | Model select (Normal: "H") |
| 35 | P5 (5) | 1 | Model select (Normal: "L") |
| 36 | P5 (4) | l | Mechanism mode switch ("ON": "L", "OFF": "H") |
| 37 | P5 (3) | 1 | Cassette half det. switch ("ON": "L", "OFF": "H") |
| 38 | P5 (2) | l | Reverse rec. inh. switch of deck 2 ("ON": "L", "OFF": "H") |
| 39 | P5 (1) | l | Forward rec. inh. switch of deck 2 ("ON": "L", "OFF": "H") |
| 40 | P5 (0) | l | Reel rotation pulse signal of deck 2 |
| 41 | P1 (7) | 0 | Dolby C "ON/OFF" select signal ("ON": "L", "OFF": "H") |
| 42 | P1 (6) | 0 | Dolby B "ON/OFF" select signal ("ON": "L", "OFF": "H") |
| 43 | P1 (5) | | Not used, open |
| 44 | P1 (4) | 0 | Playback amp. select signal (Deck 2-P.B: "L", others: "H") |
| 45 | P1 (3) | 0 | Bias OSC "ON/OFF" select signal ("ON": "L", "OFF": "H") |
| 46 | P1 (2) | _ | Not used, open |

PACKING

| Pin No. | Mark | I/O Division | Function |
|------------|--------|-----------------|--|
| 47 | P1 (1) | 0 | Dolby circuit encord/decord select signal (encord: "L", decord: "H") |
| 48 | P1 (0) | _ | Not used, open |
| 49 | P0 (7) | ı | Due electricaet |
| 50 | P0 (6) | 0 | Bus clock signal |
| 51 | P0 (5) | ı | Bus data signal |
| 52 | P0 (4) | 0 | bus data signal |
| 53 | P0 (3) | l | Forward rec. inh. switch of deck 1 ("ON": "L", "OFF": "H") |
| 54 | P0 (2) | I | Reverse rec. inh. switch of deck 1 ("ON": "L", "OFF": "H") |
| 55 | P0 (1) | I | Cassette-half det. switch of deck 1 ("ON": "L", "OFF": "H") |
| 56 | P0 (0) | I | Mechanism mode-switch of deck 1 ("ON": "L", "OFF": "H") |
| 57 | P2 (7) | 0 | Mechanism plunger "ON/OFF" select signal of deck 2 ("ON": "H", "OFF": "L") |

| Pin No. | Mark | I/O Division | Function |
|------------|--------|-----------------|--|
| 58 | P2 (6) | 0 | Mechanism motor "ON/OFF" select signal of deck 2 ("ON": "H", "OFF": "L") |
| 59 | P2 (5) | 0 | Mechanism motor speed select signal of deck 2 ("X1": "H", "X2": "L") |
| 60 | P2 (4) | 0 | Mechanism plunger "ON/OFF" select signal of deck 1 ("ON": "H", "OFF": "L") |
| 61 | P2 (3) | 0 | Mechanism motor speed select signal of deck 1 ("X1": "H", "X2": "L") |
| 62 | P2 (2) | 0 | Mechanism motor "ON/OFF" select signal of deck 1 ("ON": "H", "OFF": "L") |
| 63 | P2 (1) | ſ | Mechanism reel rotation pulse signal of deck 1 |
| 64 | P2 (0) | l | Power switch ("ON": "L", "OFF": "H") |

• IC551 (HD404302SA02): MICROCOMPUTER (This microcomputer is used for FL meter operation.)

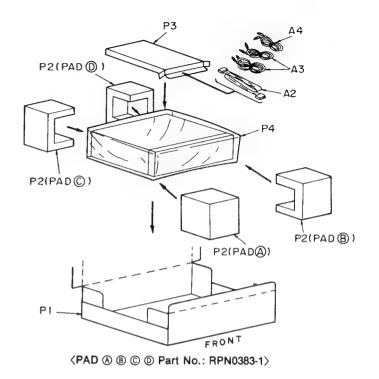
| Pin No. | Mark | I/O Division | Function | | | | |
|------------------------|-----------------------|-----------------|--|--|--|--|--|
| 1 | SIN | ı | Serial data signal | | | | |
| 2 • 5 5 16 | S1 S12 • S14 | 0 | Segment signal for FL display | | | | |
| 3 | S13 | _ | Not used, open | | | | |
| 4 | V disp | I | Pull down power supply terminal (-V _{cc}) | | | | |
| 17 | CP2 | | Peel pulse signal of deck 2 | | | | |
| 18 | CP1 | ' | reel pulse signal of deck 2 | | | | |
| 19 | CRST2 | 1 | Tape counter reset terminal of deck 2 | | | | |
| 20 | CRST1 | 1 | Tape counter reset terminal of deck 1 | | | | |
| 21 | GND | _ | GND terminal | | | | |
| 22 | AVCC | 1 | Power supply terminal | | | | |

| | Pin No. | Mark | I/O Division | Function |
|--|--------------------------|---------------|-----------------|-------------------------------|
| | 23 | _ | _ | |
| | 24 | VRIN | _ | Rec level control signal |
| | 25 | SIGL | 1 | Lch level signal |
| | 26 | SIGR | ı | Rch level signal |
| | 27 | AVSS | _ | GND terminal |
| | 28 | RESET | I | Reset terminal ("RESET": "H") |
| | 29 | TEST | 1 | Test terminal |
| | 30 | OSC1 | 0 | Otable OOO Asserting (AAAII) |
| | 31 | OSC2 | ŧ | Clock OSC terminal (4MHz) |
| | 32 | VCC | ı | Power supply terminal |
| | 33 5 38 • 41 | G1 | 0 | Grid signal for FL display |
| | 39 • 41 | G7 • G8 | _ | Not used, open |
| | 42 | PWM | _ | Not used, open |

Note:

This packing not illustrated Ref. No. A1 (A1-1, A1-2, A1-3).

Refer to the packing on page 38 of the service manual for Model No. SU-X302, Order No. AD9103050C8



REPLACEMENT PARTS LIST

Notes: • Important safety notice:

Components identified by A mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

| | - | ics use only manufacturer | | | | | |
|-----------|--------------|---------------------------|---------|-----------|-------------|-------------------------|---------|
| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
| - | | | | Q904 | 2SB1030QTA | TRANSISTOR | |
| | | INTEGRATED CIRCUIT (S) | | Q905 | KSC2785YGTA | TRANSISTOR | |
| | | | | Q906 | DTC114ESTP | TRANSISTOR | |
| IC1 | AN7384N | ELECTRIC VOLUME | | Q908, 909 | DTA114ESTP | TRANSISTOR | |
| IC2 | AN7351K | PLAYBACK/REC AMP | | Q910 | DTC114ESTP | TRANSISTOR | |
| IC7 | M5218L | REC LEVEL CONTROL | | Q911 | KSA1175YGTA | TRANSISTOR | |
| IC401 | CXA1331S | DOLBY B/C NR | | Q912 | 2SB1240-P | TRANSISTOR | |
| IC551 | HD404302SA02 | MICROCOMPUTER; FL METER | | Q913 | DTC114ESTP | TRANSISTOR | |
| IC552 | M5218L | BUFFER AMP | | Q914 | 2SB1030QTA | TRANSISTOR | |
| IC901 | M50963-245SP | MICROCOMPUTER; MECHANICAL | | Q915 | DTC114ESTP | TRANSISTOR | |
| IC951 | DN6851ALB | HALL (DECK1) | | Q916 | 2SB1030QTA | TRANSISTOR | |
| IC971 | DN6851ALB | HALL (DECK2) | | Q917 | DTC114ESTP | TRANSISTOR | |
| | | | | Q918 | KSA1175YGTA | TRANSISTOR | |
| | | TRANSISTOR(S) | | Q919 | DTC114ESTP | TRANSISTOR | |
| | | | | Q920 | 2SB1240-P | TRANSISTOR | |
| Q3, 4 | 2SJ164PQRTA | TRANSISTOR | | Q921 | DTC114ESTP | TRANSISTOR | |
| Q5-8 | KSA1175YGTA | TRANSISTOR | | Q928 | DTA114ESTP | TRANSISTOR | - |
| Q9-14 | KSC2785YGTA | TRANSISTOR | | Q929 | KSC2785YGTA | TRANSISTOR | |
| Q15, 16 | 2SD1450RSTA | TRANSISTOR | pools. | Q930 | DTA114ESTP | TRANSISTOR | · ···· |
| Q301, 302 | 2SC3311A-Q | TRANSISTOR | | Q931 | DTC114ESTP | TRANSISTOR | |
| Q303 | KSB564ACYGTA | TRANSISTOR | | Q932 | KSC2785YGTA | TRANSISTOR | |
| Q304 | KSD471ACYGTA | TRANSISTOR | | Q933 | DTA114ESTP | TRANSISTOR | |
| Q551 | KSA1175YGTA | TRANSISTOR | | Q934 | DTC114ESTP | TRANSISTOR | |
| Q604 | 2SD2037EFTA | TRANSISTOR | | | | | |
| 2605 | 2SB1357EFTA | TRANSISTOR | | | | DIODE (S) | |
| Q606 | 2SD2037EFTA | TRANSISTOR | | | | | |
| 2607 | KSB564ACYGTA | TRANSISTOR | | D1, 2 | MA167 | DIODE | |
| 2902, 903 | DTA114ESTP | TRANSISTOR | | D311 | MA165 | DIODE | |

| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
|---------------------------------------|-----------------|-----------------------------------|---------|--------------|--------------------------|----------------------------------|--------------|
| D551-554 | MA165 | DIODE | | FL551 | RSL0098-F | DISPLAY TUBE | |
| D555 | MTZJ5R6BTA | DIODE | | | | | |
| D557, 558 | MA165 | DIODE | | | 1 | SWITCH(ES) | |
| D601-606 | 1SR35200TB | DIODE | Δ | | | | |
| D607, 608 | MTZJ8R2CTA | DIODE | | S701 | EVQ21405R | STOP (DECK1) | |
| D609 | MA4240H | DIODE | | S702 | EVQ21405R | F. F. (DECK1) | |
| D610 | MA4062 | DIODE | | S703 | EVQ21405R | REW. (DECK1) | |
| D611 | 1SR35200TB | DIODE | Δ | S704 | EVQ21405R | F. PLAYBACK (DECK1) | |
| D613-615 | 1SR35200TB | DIODE | Δ | \$705 | EV021405R | R. PLAYBACK (DECK1) | |
| D813 | MA165 | DIODE | | S708 | EVQ21405R | REVERSE MODE | |
| D902-907 | MA165 | DIODE | | S709 | EVQ21405R | DOLBY NR | - |
| D908 | 1SR35200TB | DIODE | | S711 | EVQ21405R | STOP (DECK2) | |
| D909 | MA165 | DIODE | | S712 | EVQ21405R | F. F. (DECK2) | |
| D910 | MA700TA | DIODE | | S713 | EVQ21405R | REW. (DECK2) | |
| D911, 912 | MA165 | DIODE | Δ | S714 | EVQ21405R | F. PLAYBACK (DECK2) | |
| D917 | MA700TA | DIODE | | S715 | EVQ21405R | R. PLAYBACK (DECK2) | |
| D919 | MA165 | DIODE | | S716 | EVQ21405R | REC (DECK2) | |
| D951 | RVD1SS133TA | DIODE (DECK1) | | S717 | EVQ21405R | PAUSE (DECK2) | |
| D971 | RVD1SS133TA | DIODE (DECK2) | | S718 | EVQ21405R | SYNCHRO START | |
| 5371 | IIIDISSISSIA | DIODE (DEGIZE) | | S719 | EVQ21405R EVQ21405R | TAPE EDIT SPEED(X1/X2) | |
| | | VARIABLE RESISTOR(S) | | S720 | EVQ21405R | COUNTER RESET (DECK2) | |
| | | VARIABLE RESISTOR(S) | | S722 | EVQ21405R EVQ21405R | AUTO REC MUTE (DECK2) | - |
| VR1 | EV 102EE01 B1 5 | REC. LEVEL CONTROL | | S724 | | | |
| VR3-6 | | PLAYBACK GAIN ADJ. | | S951 | EVQ21405R RSH1A89ZB-U | DECK (POWER ON/OFF) MODE (DECK1) | |
| VR7, 8 | | OVERALL GAIN ADJ. | | S952 | - | | 1 |
| VR301 | | ERASE CURRENT ADJ. | | S952 S953 | RSH1A90YB-U | HALF (DECK1) | |
| VR302, 303 | | | | | RSH1A90YB-U | ATS (DECK1) | |
| VR901-903 | | OVERALL FREQ ADJ. TAPE SPEED ADJ. | | S971 | RSH1A89ZB-U | MODE (DECK2) | |
| 4U901-902 | EVINDAADUDGG | TAPE SPEED ADS. | | S972 | RSH1A90YB-U | HALF (DECK2) | |
| | | COMPONENT COMPINITION (C) | | S973 | RSH1A90YB-U | R REC INH (DECK2) | |
| | | COMPONENT COMBINATION(S) | | S974 | RSH1A90YB-U | F. REC INH. (DECK2) | |
| Z901 | EVDESEECO BAL | COMPLIANTION DADE (F. CLVC) | | S975 | RSH1A90YB-U | ATS (DECK2) | |
| 7901 | EXBF7E562JYV | COMBINATION PART (5. 6kX6) | | S976 | RSH1A90YB-U | ATS (DECK2) | |
| | | GOT! (D) | | | | | |
| | | COIL (S) | | | | CONNECTOR(S) AND SOCKET(S) | |
| L1, 2 | SLQX303-1KT | COIL | | CN3 | RJS7T4ZA | CONNECTOR (7P) | |
| L3, 4 | | COIL | | CN4 | RJS1A1704 | CONNECTOR (4P) | |
| L5, 6 | | COIL | | CN5 | SJSD1005 | CONNECTOR (10P) | |
| L301 | SL09B4-K | COIL | | CNS | RJS1A1704 | CONNECTOR (4P) | |
| L401, 402 | | COIL | | CN8 | SJSD1005 | CONNECTOR (10P) | |
| 101, 102 | QUAIS LIGHT | COIL | | CN11, 12 | | | |
| · · · · · · · · · · · · · · · · · · · | | TRANSFORMER (S) | | | RJU003K010M1 | SOCKET (10P) | |
| | | TRANSFORMER (3) | | CP1 | SJTD413 | CONNECTOR (4P) | |
| T601 | DTD1 UACOO1 | DOWED TO A DOCUMEN | Δ | CP2 | RJP5G18ZA | CONNECTOR (5P) | |
| 1001 | RTP1H4G001 | POWER TRANSFORMER | Δ | CP11, 12 | RJT003K010M1 | CONNECTOR (10P) | |
| | | ACCITI LETON (C) | | | | vagu (a) | ļ |
| | | OSCILLATOR(S) | | | ļ | JACK(S) | |
| X551 | PEOCCADOAAA | OFDINIO FILED (ME) | | 71/4 | a record | TERRITAL DOLDS | |
| | | CERAMIC FILTER (4MHz) | | JK1 | SJF3069-2N | TERMINAL BOARD | |
| V20T | LCUUV4UU4A4 | CERAMIC FILTER (4MHz) | | JK3-5 | RJJ33T01 | M3 JACK | |
| | | DICDLAY TIDE | | JK7 | RJS1A0203-0 | SOCKET(3P) TO AMPLIFIER | Δ |
| | | DISPLAY TUBE | | - | | (III) FADE (C) | |
| | | **** | | | 1 | GND PART (S) | l |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|----------------------------------|---------|
| E1 | SNE1004-1 | GND PLATE | |
| | | FLAT CABLE (S) | |
| | | FLAT CABLE (7P) | |
| ₩5 | RWJ0210200QQ | FLAT CABLE (4P) FLAT CABLE (10P) | |
| | | FLAT CABLE (4P) FLAT CABLE (10P) | |
| | | | |
| | | | 04. |
| | | | |

RESISTORS & CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)

* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000k(OHM)

| Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Val | ues & Remarks | Ref. No. | Part No. | Val | ues & F | Remarks |
|----------|-------------|------------------|-----------|-------------|------|---------------|-----------|--------------|------|---------|---------|
| | | | R61, 62 | ERDS2TJ152 | 1/4₩ | 1. 5K | R563, 564 | ERDS2TJ103 | 1/4W | 10K | |
| | | RESISTORS | R65 | ERDS2TJ392T | 1/4 | 3. 9K | R565 | ERDS2TJ105T | 1/4₩ | 1M | |
| | | | R67 | ERDS2TJ103 | 1/4W | 10K | R566, 567 | ERDS2TJ103 | 1/4W | 10K | |
| R1, 2 | ERDS2TJ394 | 1/4W 390K | R85 | ERDS2TJ101 | 1/4₩ | 100 | R569 | ERDS2TJ105T | 1/4W | 1M | |
| R3, 4 | ERDS2TJ393 | 1/4W 39K | R91 | ERDS2TJ124T | 1/4₩ | 120K | R605, 606 | ERD2FCVJ5R6T | 1/4W | 5. 6 | Δ |
| R5, 6 | ERDS2TJ183T | 1/4W 18K | R93 | ERDS2TJ273 | 1/4₩ | 27K | R607, 608 | ERDS2TJ102 | 1/4W | 1K | |
| R9, 10 | ERDS2TJ332 | 1/4W 3.3K | R94 | ERDS2TJ123 | 1/4W | 12K | R611 | ERD2FCVG100T | 1/4₩ | 10 | Δ |
| R11, 12 | ERDS2TJ561 | 1/4W 560 | R131, 132 | ERDS2TJ104 | 1/4W | 100K | R612 | ERD2FCVG270T | 1/4W | 27 | Δ |
| R13, 14 | ERDS2TJ332 | 1/4W 3. 3K | R133, 134 | ERDS2TJ562 | 1/4₩ | 5. 6K | R613 | ERDS2TJ102 | 1/4W | 1K | |
| R19, 20 | ERDS2TJ101 | 1/4W 100 | R135, 136 | ERDS2TJ822 | 1/4₩ | 8. 2K | R614 | ERDS2TJ222 | 1/4W | 2. 2K | |
| R21, 22 | ERDS2TJ104 | 1/4W 100K | R137, 138 | ERDS2TJ562 | 1/4W | 5. 6K | R615, 616 | ERDS2TJ270T | 1/4W | 27 | |
| R23, 24 | ERDS2TJ101 | 1/4W 100 | R144, 145 | ERDS2TJ103 | 1/4W | 10K | R617, 618 | ERQ16NKWR15E | 1₩ | 0. 15 | |
| R25, 26 | ERDS2TJ225 | 1/4W 2.2M | R301 | ERDS2TJ1RO | 1/4₩ | 1.0 | R619-621 | ERDS2TJ560T | 1/4W | 56 | |
| R27, 28 | ERDS2EJ121 | 1/4W 120 | R302, 303 | ERDS2TJ183T | 1/4W | 18K | R623 | ERDS2TJ560T | 1/4W | 56 | |
| R29, 30 | ERDS2TJ103 | 1/4W 10K | R304, 305 | ERDS2TJ100 | 1/4W | 10 | R624, 625 | ERDS2TJ270T | 1/4W | 27 | |
| R31, 32 | ERDS2TJ273 | 1/4W 27K | R306 | ERDS2TJ471 | 1/4W | 470 | R631 | ERD25FVJ2R7T | 1/4W | 2. 7 | A |
| R33, 34 | ERDS2TJ183T | 1/4W 18K | R307 | ERDS2TJ561 | 1/4₩ | 560 | R701 | ERDS2TJ821 | 1/4W | 820 | |
| R35, 36 | ERDS2TJ474 | 1/4W 470K | R405, 406 | ERDS2TJ242 | 1/4₩ | 2. 4K | R702 | ERDS2TJ102 | 1/4W | 1K | |
| R37, 38 | ERDS2TJ272T | 1/4W 2.7K | R407, 408 | ERDS2TJ562 | 1/4₩ | 5. 6K | R703 | ERDS2TJ122 | 1/4W | 1. 2K | |
| R43, 44 | ERDS2TJ103 | 1/4W 10K | R409, 410 | ERDS2TJ243T | 1/4W | 24K | R704 | ERDS2TJ152 | 1/4W | 1. 5K | |
| R45, 46 | ERDS2TJ223 | 1/4W 22K | R411, 412 | ERDS2TJ561 | 1/4W | 560 | R705 | ERDS2TJ182 | 1/4W | 1. 8K | |
| R47, 48 | ERDS2TJ472 | 1/4W 4.7K | R417 | ERDS2TJ151 | 1/4₩ | 150 | R706 | ERDS2TJ222 | 1/4W | 2. 2K | |
| R49, 50 | ERDS2TJ122 | 1/4W 1.2K | R418 | ERDS2TJ273 | 1/4W | 27K | R707 | ERDS2TJ332 | 1/4W | 3. 3K | |
| R51, 52 | ERDS2TJ330 | 1/4W 33 | R551-556 | ERDS2TJ473 | 1/4₩ | 47K | R708 | ERDS2TJ472 | 1/4W | 4. 7K | |
| R53, 54 | ERDS2TJ562 | 1/4W 5.6K | R557, 558 | ERDS2TJ220T | 1/4₩ | 22 | R713 | ERDS2TJ821 | 1/4W | 820 | |
| R55, 56 | ERDS2TJ272T | 1/4W 2.7K | R559, 560 | ERDS2TJ152 | 1/4₩ | 1. 5K | R714 | ERDS2TJ102 | 1/4W | 1K | |
| R57, 58 | ERDS2TJ103 | 1/4W 10K | R561 | ERDS2TJ102 | 1/4W | 1K | R715 | ERDS2TJ122 | 1/4W | 1. 2K | |
| R59, 60 | ERDS2TJ332 | 1/4W 3. 3K | R562 | ERDS2TJ471 | 1/4W | 470 | R716 | ERDS2TJ152 | 1/4W | 1. 5K | |
| | | | | | | | | | | | |

Ref. No.

Pa

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| | | | |
| E1 | SNE1004-1 | GND PLATE | |
| | | FLAT CABLE(S) | |
| | | TOTAL GENERAL (C) | **** |
| W3 | RWJ0207210QQ | FLAT CABLE (7P) | |
| | | FLAT CABLE (4P) | |
| | | FLAT CABLE (10P) | · |
| | | FLAT CABLE (4P) | |
| W8 | RWJ0210200KQ | FLAT CABLE (10P) | |
| | | | |
| | | | |
| *** | | | |
| | | | |
| | | | ***** |

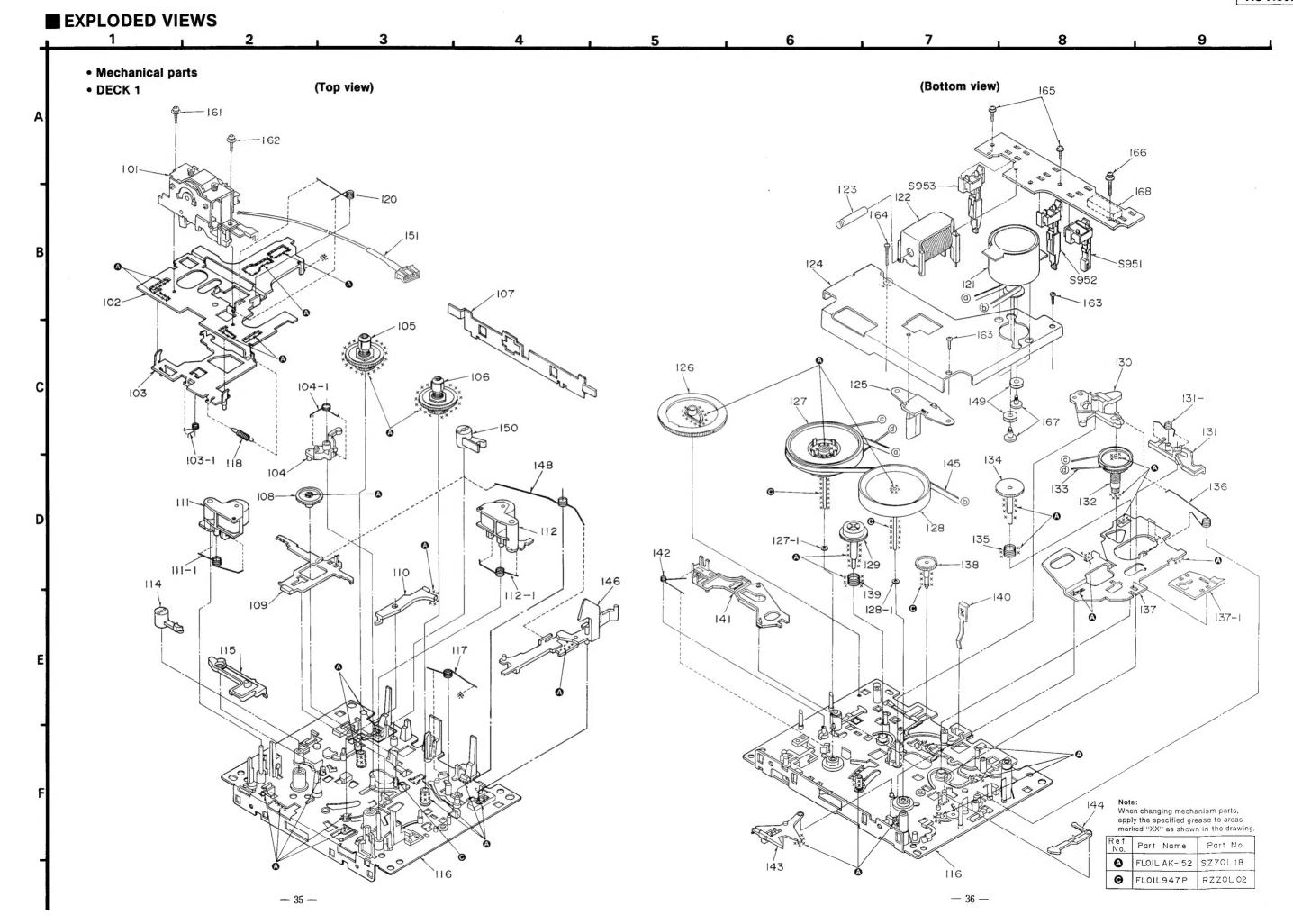
RESISTORS & CAPACITORS

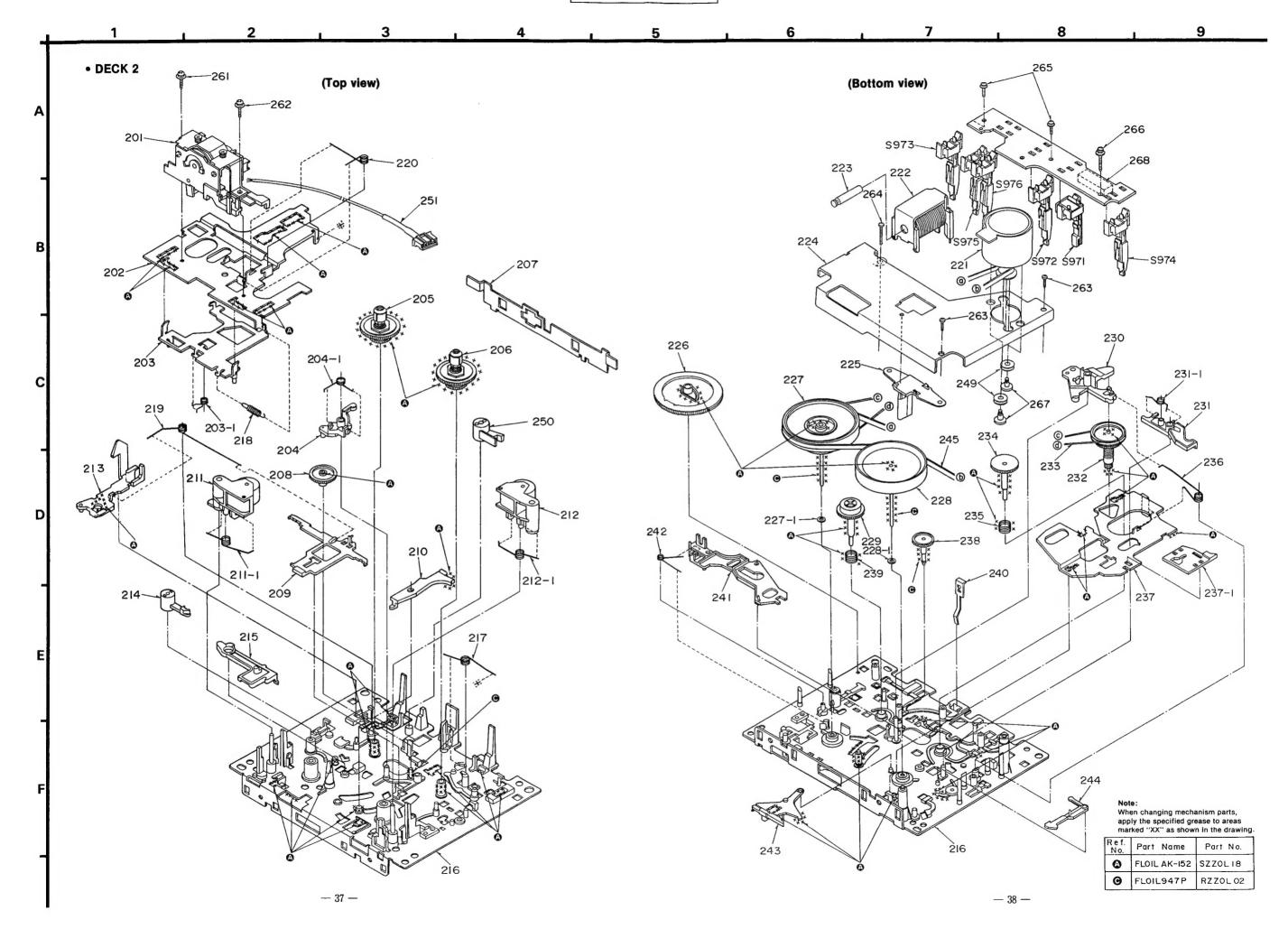
Remarks

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K-1,000(0HM) , 1M-1,000k(0HM)

| Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Val | ues & Remarks | Ref. No. | Part No. | Val | ues & l | Remarks |
|----------|-------------|------------------|-----------|-------------|------|---------------|-----------|--------------|------|---------|---------|
| | | | R61, 62 | ERDS2TJ152 | 1/4W | 1. 5K | R563, 564 | ERDS2TJ103 | 1/4W | 10K | |
| | | RESISTORS | R65 | ERDS2TJ392T | 1/4₩ | 3. 9K | R565 | ERDS2TJ105T | 1/4₩ | 1M | |
| _ | | | R67 | ERDS2TJ103 | 1/4W | 10K | R566, 567 | ERDS2TJ103 | 1/4W | 10K | |
| R1, 2 | ERDS2TJ394 | 1/4W 390K | R85 | ERDS2TJ101 | 1/4₩ | 100 | R569 | ERDS2TJ105T | 1/4₩ | 1M | |
| R3, 4 | ERDS2TJ393 | 1/4W 39K | R91 | ERDS2TJ124T | 1/4W | 120K | R605, 606 | ERD2FCVJ5R6T | 1/4₩ | 5. 6 | Δ |
| R5, 6 | ERDS2TJ183T | 1/4W 18K | R93 | ERDS2TJ273 | 1/4W | 27K | R607, 608 | ERDS2TJ102 | 1/4W | 1K | |
| R9, 10 | ERDS2TJ332 | 1/4W 3.3K | R94 | ERDS2TJ123 | 1/4₩ | 12K | R611 | ERD2FCVG100T | 1/4W | 10 | Δ |
| R11, 12 | ERDS2TJ561 | 1/4W 560 | R131, 132 | ERDS2TJ104 | 1/4W | 100K | R612 | ERD2FCVG270T | 1/4W | 27 | ⚠ |
| R13, 14 | ERDS2TJ332 | 1/4W 3.3K | R133, 134 | ERDS2TJ562 | 1/4₩ | 5. 6K | R613 | ERDS2TJ102 | 1/4W | 1K | |
| R19, 20 | ERDS2TJ101 | 1/4W 100 | R135, 136 | ERDS2TJ822 | 1/4₩ | 8. 2K | R614 | ERDS2TJ222 | 1/4W | 2. 2K | |
| R21, 22 | ERDS2TJ104 | 1/4W 100K | R137, 138 | ERDS2TJ562 | 1/4₩ | 5. 6K | R615, 616 | ERDS2TJ270T | 1/4W | 27 | |
| R23, 24 | ERDS2TJ101 | 1/4W 100 | R144, 145 | ERDS2TJ103 | 1/4W | 10K | R617, 618 | ERQ16NKWR15E | 1₩ | 0. 15 | |
| R25, 26 | ERDS2TJ225 | 1/4W 2.2M | R301 | ERDS2TJ1R0 | 1/4W | 1.0 | R619-621 | ERDS2TJ560T | 1/4W | 56 | |
| R27, 28 | ERDS2EJ121 | 1/4W 120 | R302, 303 | ERDS2TJ183T | 1/4W | 18K | R623 | ERDS2TJ560T | 1/4W | 56 | |
| R29, 30 | ERDS2TJ103 | 1/4W 10K | R304, 305 | ERDS2TJ100 | 1/4W | 10 | R624, 625 | ERDS2TJ270T | 1/4₩ | 27 | |
| R31, 32 | ERDS2TJ273 | 1/4W 27K | R306 | ERDS2TJ471 | 1/4W | 470 | R631 | ERD25FVJ2R7T | 1/4W | 2.7 | A |
| R33, 34 | ERDS2TJ183T | 1/4W 18K | R307 | ERDS2TJ561 | 1/4W | 560 | R701 | ERDS2TJ821 | 1/4W | 820 | |
| R35, 36 | ERDS2TJ474 | 1/4W 470K | R405, 406 | ERDS2TJ242 | 1/4W | 2. 4K | R702 | ERDS2TJ102 | 1/4W | 1K | |
| R37, 38 | ERDS2TJ272T | 1/4W 2.7K | R407, 408 | ERDS2TJ562 | 1/4₩ | 5. 6K | R703 | ERDS2TJ122 | 1/4W | 1. 2K | |
| R43, 44 | ERDS2TJ103 | 1/4W 10K | R409, 410 | ERDS2TJ243T | 1/4W | 24K | R704 | ERDS2TJ152 | 1/4W | 1.5K | |
| R45, 46 | ERDS2TJ223 | 1/4W 22K | R411, 412 | ERDS2TJ561 | 1/4W | 560 | R705 | ERDS2TJ182 | 1/4W | 1.8K | |
| R47, 48 | ERDS2TJ472 | 1/4W 4.7K | R417 | ERDS2TJ151 | 1/4W | 150 | R706 | ERDS2TJ222 | 1/4W | 2. 2K | |
| R49, 50 | ERDS2TJ122 | 1/4W 1.2K | R418 | ERDS2TJ273 | 1/4W | 27K | R707 | ERDS2TJ332 | 1/4₩ | 3. 3K | |
| R51, 52 | ERDS2TJ330 | 1/4W 33 | R551-556 | ERDS2TJ473 | 1/4₩ | 47K | R708 | ERDS2TJ472 | 1/4W | 4. 7K | |
| R53, 54 | ERDS2TJ562 | 1/4W 5.6K | R557, 558 | ERDS2TJ220T | 1/4W | 22 | R713 | ERDS2TJ821 | 1/4W | 820 | |
| R55, 56 | ERDS2TJ272T | 1/4W 2.7K | R559, 560 | ERDS2TJ152 | 1/4W | 1. 5K | R714 | ERDS2TJ102 | 1/4W | 1K | |
| R57, 58 | ERDS2TJ103 | 1/4W 10K | R561 | ERDS2TJ102 | 1/4₩ | 1K | R715 | ERDS2TJ122 | 1/4W | 1. 2K | |
| R59, 60 | ERDS2TJ332 | 1/4W 3.3K | R562 | ERDS2TJ471 | 1/4W | 470 | R716 | ERDS2TJ152 | 1/4₩ | 1. 5K | |

| Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks | Ref. No. | Part No. | Values & Remarks |
|-----------|---------------------------|------------------|-----------|--------------|------------------|-----------|---------------|------------------|
| R717 | ERDS2TJ182 | 1/4W 1.8K | R963 | ERDS2TJ392T | 1/4W 3. 9K | C304, 305 | ECKW1H222KB5 | 50V 2200P |
| R718 | ERDS2TJ222 | 1/4W 2.2K | R964 | ERDS2TJ184T | 1/4W 180K | C306 | ECKD1H682KB | 50V 6800P |
| R719 | ERDS2TJ332 | 1/4W 3.3K | R965 | ERDS2TJ103 | 1/4W 10K | C307, 308 | ECCR1H221K5 | 50V 220P |
| R720 | ERDS2TJ472 | 1/4W 4.7K | R966 | ERDS2TJ223 | 1/4W 22K | C309 | ECKR1H103ZF5 | 50V 0. 01U |
| R721 | ERDS2TJ682T | 1/4W 6.8K | R967 | ERDS2TJ821 | 1/4W 820 | C310 | ECKR1H472KB5 | 50V 4700P |
| R722 | ERDS2TJ123 | 1/4W 12K | R968, 969 | ERDS2TJ472 | 1/4W 4.7K | C331 | ECKR1H103ZF5 | 50V 0. 01U |
| R852 | ERD2FCVG470T | 1/4₩ 47 ⚠ | R973 | ERDS2TJ472 | 1/4W 4.7K | C405-408 | ECQB1H222JZ3 | 50V 2200P |
| R902 | ERDS2TJ822 | 1/4W 8. 2K | R979 | ERDS2TJ153 | 1/4W 15K | C409, 410 | ECEA1HUR56B | 50V 0. 56U |
| R903 | ERDS2TJ393 | 1/4W 39K | R980-985 | ERDS2TJ393 | 1/4W 39K | C411, 412 | ECEA1 HKAR33B | 50V 0. 33U |
| R904, 905 | ERDS2TJ222 | 1/4W 2.2K | R986 | ERDS2TJ103 | 1/4W 10K | C413-416 | ECEA1EKA4R7B | 25V 4. 7U |
| R906 | ERDS2TJ103 | 1/4W 10K | R990 | ERDS2TJ100 | 1/4W 10 | C551, 552 | ECEA1CKA100B | 16V 10U |
| R907 | ERDS2TJ563 | 1/4W 56K | R993 | ERDS2TJ103 | 1/4W 10K | C553, 554 | ECEAOJKA101B | 6. 3V 100U |
| R908-910 | ERDS2TJ103 | 1/4W 10K | R994 | ERDS2TJ102 | 1/4W 1K | C555 | ECKR1H103ZF5 | 50V 0. 01U |
| R911 | ERDS2TJ392T | 1/4W 3.9K | R995, 996 | ERDS2TJ100 | 1/4W 10 | C556 | ECEAOJKA101B | 6. 3V 100U |
| R912 | ERDS2TJ222 | 1/4₩ 2.2K | R997 | ERDS2TJ562 | 1/4W 5.6K | C557 | ECEA1EKA4R7B | 25V 4. 7U |
| R913 | ERDS2TJ271 | 1/4W 270 | R998 | ERDS2TJ100 | 1/4W 10 | C558 | ECEA1HKA010B | 50V 1U |
| R914 | ERDS2TJ681 | 1/4W 680 | | | | C559 | ECKR1H103ZF5 | 50V 0. 01U |
| R915 | ERDS2TJ473 | 1/4W 47K | | | CAPACITORS | C561 | ECKR1H103ZF5 | 50V 0. 01U |
| | ERDS2TJ272T | 1/4W 2.7K | | | | C601 | ECKR2H682PE | 500V 6800P |
| | ERDS2TJ103 | 1/4W 10K | C1-3 | ECEA1HKA010B | 50V 1U | C602, 603 | ECA1EM102B | 25V 1000U |
| R919 | ERDS2TJ471 | 1/4W 470 | C5, 6 | ECEA1CKA220B | 16V 22U | C604, 605 | ECKR1H103ZF5 | 50V 0. 01U |
| R920-922 | ERDS2TJ103 | 1/4W 10K | C7-10 | ECBT1H561KB5 | 50V 560P | C606, 607 | ECEA1AKA221Q | 10V 220U |
| | ERDS2TJ100 | 1/4W 10 | C11, 12 | ECBT1H102KB5 | 50V 1000P | C608, 609 | ECKR1H103ZF5 | 50V 0. 01U |
| | ERDS2TJ103 | 1/4W 10K | C13, 14 | ECEAOJKA101B | 6. 3V 100U | C610, 611 | ECEA1AU102B | 10V 1000U |
| | ERDS2TJ223 | 1/4W 22K | C15, 16 | ECQB1H682JZ3 | 50V 6800P | C612 | ECEA1EU222B | 25V 2200U |
| | ERDS2TJ100 | 1/4W 10 | C17-20 | ECEA1EKA4R7B | 25V 4. 7U | C613 | ECA1HM470B | 50V 47U |
| | ERDS2TJ223 | 1/4W 22K | C21 | ECEAOJKA101B | 6. 3V 100U | C618, 619 | ECFR1E104ZF5 | 25V 0. 1U |
| | ERDS2TJ273 | 1/4W 27K | C25, 26 | ECEA1EKA4R7B | 25V 4. 7U | C901 | ECAOJM222B | 6. 3V 2200U |
| | ERDS2TJ102 | 1/4W 1K | C27, 28 | ECBT1H561KB5 | 50V 560P | C903 | ECEA1HKA010B | 50V 1U |
| | ERDS2TJ392T | 1/4W 3.9K | C29, 30 | ECKR2H101KB5 | 500V 100P | C904 | ECEA1EKA4R7B | 25V 4. 7U |
| | ERDS2TJ472 | 1/4W 4.7K | C31, 32 | ECBT1H181KB5 | 50V 180P | C907 | ECKR1H103ZF5 | 50V 0.01U |
| | ERDS2TJ105T | 1/4W 1M | C33, 34 | ECEA1HKAR47B | 50V 0. 47U | C912 | ECKT1H122KB | 50V 1200P |
| | ERDS2TJ182 | 1/4W 1.8K | C35, 36 | ECQB1H472JZ | 50V 4700P | C912 | ECBT1E103ZF | 25V 0. 01U |
| l | ERDS2TJ472 | 1/4W 4.7K | | ECQB1H223JZ3 | 50V 0. 022U | | ECEA1CKA100B | 16V 10U |
| | ERDS2TJ102 | 1/4W 1K | C39, 40 | ECQB1H103JZ | 50V 0. 0220 | 0310 | ECENTONATOOD | 104 100 |
| h | ERDS2TJ103 | 1/4W 10K | C41, 42 | ECQB1H223J23 | 50V 0. 022U | | | |
| | ERDS2TJ822 | 1/4W 8. 2K | C43, 44 | ECQB1H153JZ | 50V 0. 015U | | | |
| | ERDS2TJ184T | 1/4W 180K | C45, 46 | ECBT1E103ZF | 25V 0.01U | | | |
| - | ERDS2TJ103 | 1/4W 10K | - | ECEA1CKA100B | 16V 10U | | | |
| | ERDS2TJ332 | 1/4W 3. 3K | | ECQV1H563JZ3 | 50V 0. 056U | | | |
| F | ERDS2TJ103 | 1/4W 3. 3K | C55 | ECBT1E103ZF | 25V 0.01U | | , , | |
| - | | | | | | | | |
| | ERDS2TJ392T ERDS2TJ103 | 1/4W 3.9K | C57, 58 | ECEA1AKA470B | 10V 47U | | | |
| | | 1/4W 10K | C63 | ECEA1CKA100B | 16V 10U | | | |
| | ERDS2TJ223 | 1/4W 22K | C64 | ECEA1HN010 | 50V 1U | | | |
| | ERDS2TJ821 | 1/4W 820 | C71, 72 | ECBT1H391KB5 | 50V 390P | | | |
| | ERDS2TJ223 | 1/4W 22K | C73, 74 | ECBT1C472KR5 | 16V 4700P | | | |
| | ERDS2TJ821 | 1/4W 820 | C81, 82 | ECBT1H4R7KC5 | 50V 4. 7P | | | |
| | ERDS2TJ223 | 1/4W 22K | | ECQB1H822JZ | 50V 8200P | | | |
| | ERDS2TJ821 | 1/4W 820 | | ECQB1H153JZ | 50V 0. 015U | | | |
| | ERDS2TJ153 | 1/4W 15K | C301 | ECQP1153JZ | 100V 0. 015U | | | |
| | ERDS2TJ221 | 1/4W 220 | C302 | ECEA1CKA101B | 16V 100U | | | |
| R962 | ERDS2TJ103 | 1/4W 10K | C303 | ECKR1H392KB5 | 50V 3900P | | | |





REPLACEMENT PARTS LIST

| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|----------------------|-------------------------|---------|----------|----------------------|-------------------------|-----------|
| | | | | 143 | RUB515ZA | LEVER | |
| | | MECHANISM PARTS LIST | | 144 | RUB509ZA | LEVER | |
| | | | | 145 | RDV108ZA | CAPSTAN BELT | |
| ECK1 | | | | 146 | RUB507ZD | EJECT ROD(R) | |
| .01 | RXQ0021 | HEAD BLOCK (PLAYBACK) | | 148 | RUW144ZA | SPRING | |
| 02 | RUA7932F | HEAD BASE | | 149 | RHG3032ZA | RUBBER CUSHION | |
| 103 | RZLAR300 | ROD | | 150 | RNL180ZB | DAMPRE ARM | |
| 103-1 | RUW143ZA | SPRING | | 151 | REX0061 | LEAD WIRE BLOCK(4P) | |
| 04 | 1UB0089ZA | ARM | | 161 | XTW2+6L | SCREW | |
| 04-1 | RUW148ZA | SPRING | | 162 | XTW2+8L | SCREW | |
| 105 | 1DMD018ZA | REEL TABLE (R) | | 163 | XTN26+7J | SCREW | |
| .06 | 1DMD017ZA | REEL TABLE (F) | | 164 | RHE5203ZA | SCREW | |
| 107 | RML0069-1 | LEVER | | 165 | XTW2+8S | SCREW | |
| 108 | RDG5772ZC | GEAR | | 166 | XYC2+JF16 | SCREW | |
| 109 | | | | 167 | | SCREW | |
| 110 | RUB508ZB RUB506ZB | BRAKE ROD LEVER | | 168 | RHD26002 RJS7T7ZA | CONNECTOR (7P), J951 | |
| | | ļ | | 100 | INJOI I I LA | COMMECTOR (/r), JSSI | |
| 111 | 1UB0088ZA | ARM (R) | | 1 | | | |
| 11-1 | RUW141ZA | SPRING | | | | | |
| 12 | 1UB0087ZA | ARM(F) | | | | | |
| 12-1 | RUW140ZC | SPRING | | | | | |
| 14 | RNL1ZD | DAMPER ARM | | - | | | |
| 15 | RUB5032D | MAIN LEVER | | | | | |
| 16 | RZUSX980 | CHASSIS | | | ļ | | |
| 117 | RUW142ZA | SPRING | | | | | |
| 18 | RUD105ZA | SPRING | | | | | |
| 120 | RUW139ZA | SPRING | | | | | |
| 21 | RFM133ZA | DC MOTOR | | . | | | |
| 22 | 1UE0015ZA | PLUNGER | | | | | |
| 23 | RUB428ZE | MOVING IRON CORE | | | | | |
| 24 | RUL1030YA | ANGLE | | | | | |
| 25 | RMD5014ZC | ANGLE | | | | | |
| 26 | RDG5927ZG | GEAR | | | | | |
| 27 | 1DW0037ZA | FLYWHEEL (F) | | | | Tr. | |
| 27-1 | RNW139ZA | WASHER | | | | • | |
| 28 | 1DW0038ZA | FLYWHEEL (R) | | | | | |
| 28-1 | RNW1 38ZA | WASHER | | | | | |
| .29 | 1DG0006ZA | REEL TABLE GEAR | | 1 | | | |
| 30 | RUB513ZD | ARM | | | | | |
| 31 | 1UB0091ZA | LEVER | | 1 | | | |
| 31-1 | RUW146ZA | SPRING | | 1 | | | |
| 32 | 1DR0011ZA | MAIN PULLEY | | 1 | | | |
| 33 | RDV90ZB | BELT | | | | | |
| 34 | RDG5769ZA | REEL TABLE GEAR | | 1 | | | |
| 35 | RUQ111ZB | SPRING | | 1 | | | |
| 36 | RUW145ZA | SPRING | | | | | |
| 37 | 1UB0090ZA | ROD | | 1 | | | |
| 37-1 | RUB512ZB | F. F. ROD | | 1 | | | · · · · · |
| 38 | RDG5773ZB | GEAR | | 1 | | | |
| 39 | RUQ112ZA | SPRING | | 1 | | | |
| | | | | - | | | |
| 40 | RUS609ZC | TAPE PRESSURE SPRING | | ├ | | | |
| 41 | RUB514ZC RUW147ZA | LEVER SPRING | | JL | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks | Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|----------------------|-----------------------------|---------|----------|-----------|-------------------------|---------|
| | | | | 241 | RUB514ZC | LEVER | |
| | | MECHANISM PARTS LIST | | 242 | RUW147ZA | SPRING | |
| | | INDOINATION TIMES DID | | 243 | RUB515ZA | LEVER | |
| ECK2 | | | | 244 | RUB509ZA | LEVER | |
| 201 | RXQ0019 | HEAD BLOCK (REC. /PLAYBACK) | | 245 | RDV108ZA | CAPSTAN BELT | |
| 202 | RUA793ZF | HEAD BASE | ****** | 249 | RHG3032ZA | RUBBER CUSHION | |
| 203 | RZLAR300 | ROD | | 250 | RNL180ZB | DAMPER ARM | |
| 203-1 | RUW143ZA | SPRING | | 251 | REX0059 | LEAD WIRE BLOCK(5P) | |
| | 1UB0089ZA | ARM | | 261 | XTW2+6L | SCREW | |
| 204 | RUW1 48ZA | SPRING | | 262 | XTW2+8L | SCREW | |
| 204-1 | + | | | 263 | XTN26+7J | SCREW | |
| 205 | 1DM0018ZA | REEL TABLE (R) | | 264 | RHE5203ZA | SCREW | |
| 206 | 1DM0017ZA | REEL TABLE (F) | | | XTW2+8S | SCREW | |
| 207 | RML0069-1 | LEVER | | 265 | | | |
| 208 | RDG5772ZC | GEAR | ****** | 266 | XYC2+JF16 | SCREW | |
| 209 | RUB508ZB | BRAKE ROD | | 267 | RHD26002 | SCREW | |
| 210 | RUB506ZB | LEVER | | 268 | RJS10T7ZA | CONNECTOR (10P), J971 | |
| 211 | 1UB0088ZA | ARM (R) | | | | | - |
| 211-1 | RUW141ZA | SPRING | | | | | |
| 212 | 1UB0087ZA | ARM(F) | | - | | | |
| 212-1 | RUW140ZC | SPRING | | | | | |
| 213 | RUB541ZB | EJECT ROD(L) | | | | | |
| 214 | RNL1ZD | DAMPER ARM | | | | | , |
| 215 | RUB503ZD | MAIN LEVER | | | | | |
| 216 | RZUSX980 | CHASSIS | | | | | |
| 217 | RUW142ZA | SPRING | | | | | |
| 218 | RUD105ZA | SPRING | | | | | |
| 219 | RUW167ZA | SPRING | | | | | |
| 220 | RUW139ZA | SPRING | | | | | |
| 221 | RFM133ZA | DC MOTOR | | | | | |
| 222 | 1UE0015ZA | PLUNGER | | | | | |
| 223 | RUB428ZE | MOVING IRON CORE | | | | | |
| 224 | RUL1030YA | ANGLE | | | | | |
| 225 | RMD5014ZC | ANGLE | | | | | |
| 226 | RDG5927ZG | GEAR | | | | | |
| 227 | 1DW0037ZA | FLYWHEEL (F) | | | | | |
| 227-1 | RNW139ZA | WASHER | | | | | |
| 228 | 1DW0038ZA | FLYWHEEL (R) | | | | | |
| 228-1 | RNW1 38ZA | WASHER | | | | | |
| 229 | 1DG0006ZA | REEL TABLE GEAR | | | | | |
| 230 | RUB513ZD | ARM | | | | | |
| 231 | 1UB0091ZA | LEVER | 1 | | | | |
| 231-1 | RUW1 46 ZA | SPRING | | | | | |
| 232 | 1DR0011ZA | MAIN PULLEY | | | | | |
| 233 | RDV90ZB | BELT | | | | | |
| 234 | RDG5769ZA | REEL TABLE GEAR | | | | | |
| 235 | RUQ111ZB | SPRING | | | | | |
| 236 | RUW145ZA | SPRING | | | | | |
| 237 | 1UB0090ZA | ROD | | | | | |
| 237-1 | RUB512ZB | F. F. ROD | | | | | |
| 238 | RDG5773ZB | GEAR | | | | | |
| 238 | | | | | + | | |
| 240 | RUQ112ZA RUS609ZC | SPRING TAPE PRESSURE SPRING | | | | | |